Scaffold characterization: structure and mechanics
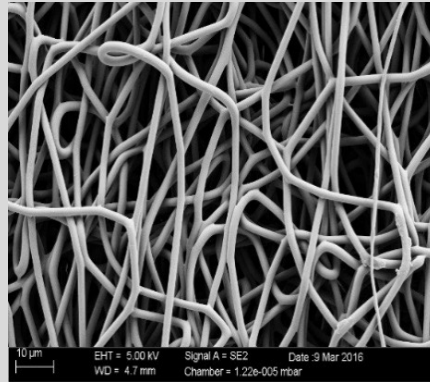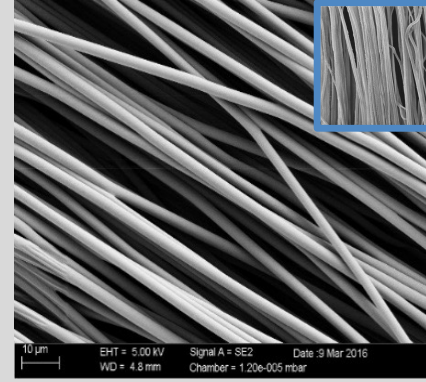

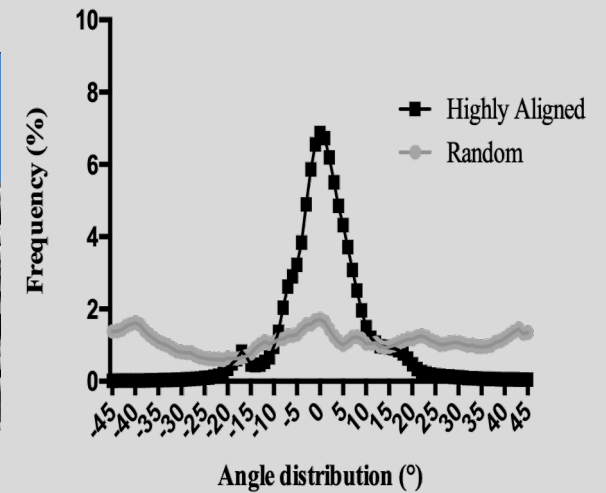**PLGA-R (CTR)**

2.1 ± 0.19 μm

PLGA-HA

2.5 ± 0.27 μm

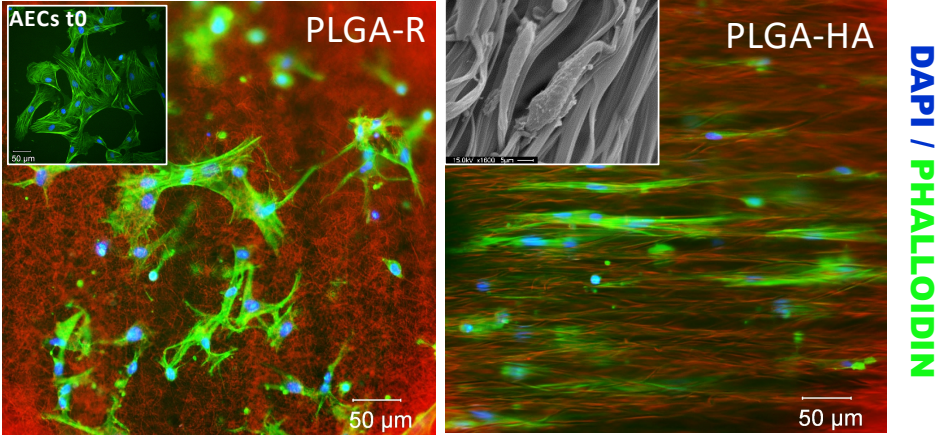| Scaffold Groups	Mechanical Parameters	
	Stress (MPa)	Strain (%)
Scaffolds PLGA-R	15 ± 0.87	240 ± 12.34
Scaffolds PLGA-HA	26.02 ± 1.75*	344 ± 24.89*

* Statistically significant values between PLGA-R and PLGA-HA scaffolds ($p < 0.05$)
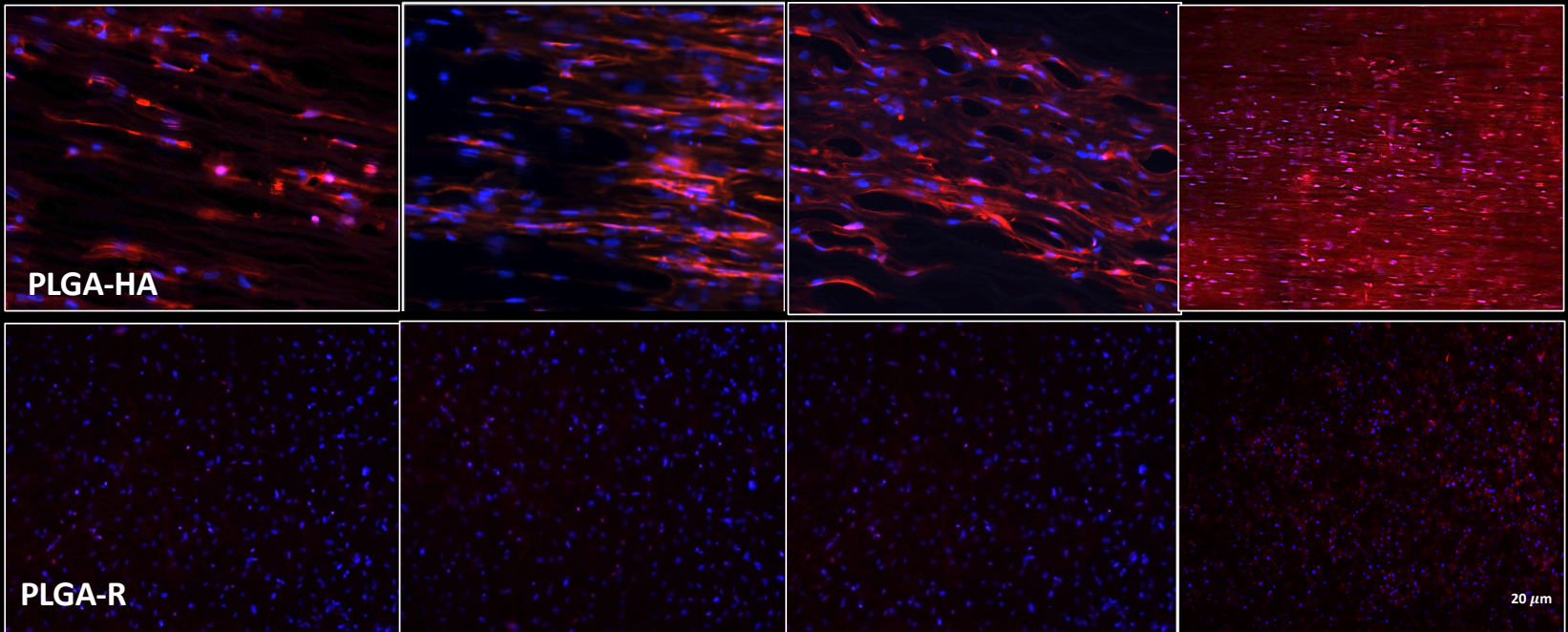
Influence of fibre topography on AECs
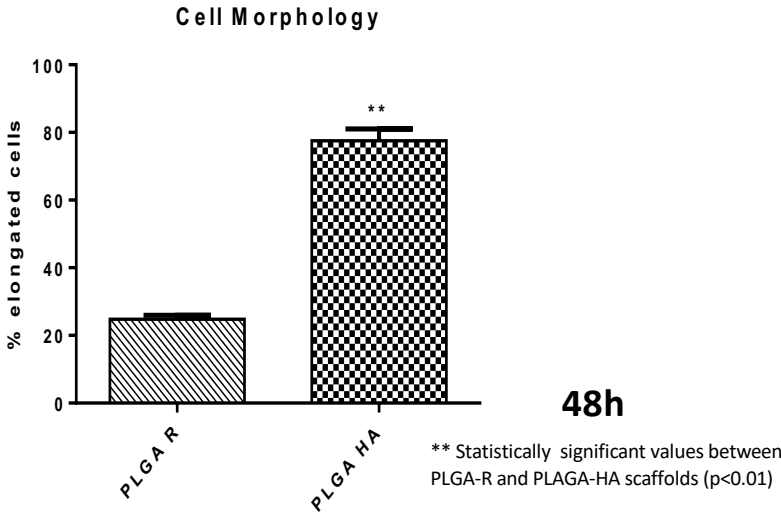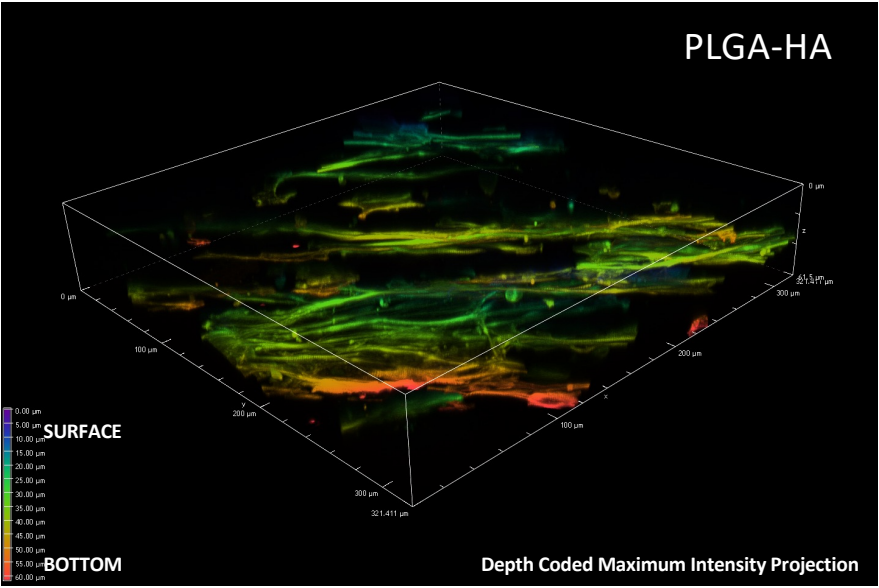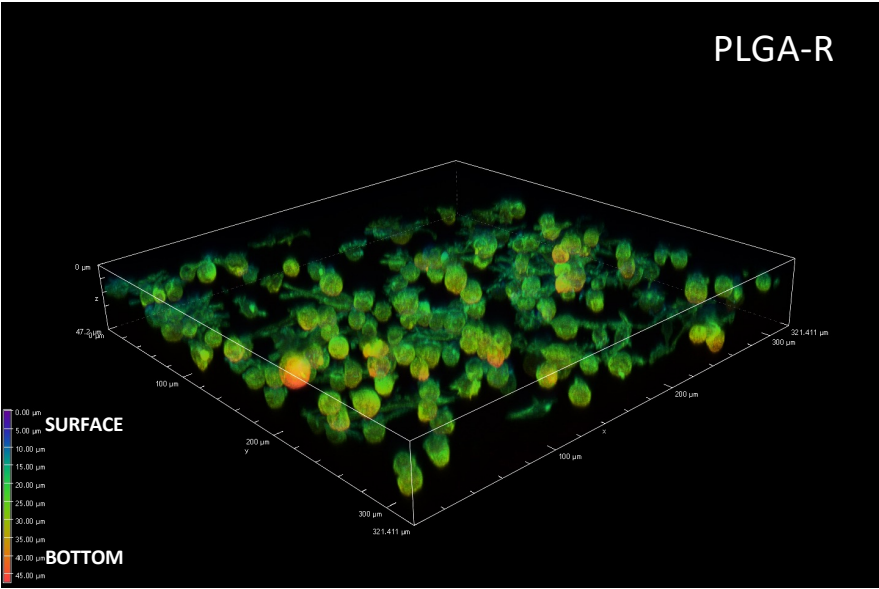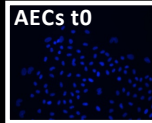
Depth Coded Maximum Intensity Projection

PLGA-R

PLGA-HA

SURFACE
BOTTOM

AECs t0
PLGA-R

PLGA-HA

DAPI / PHALLOIDIN

50 µm

50 µm

Cell Morphology

48h

** Statistically significant values between PLGA-R and PLAGA-HA scaffolds (p<0.01)

ha-PLGA scaffold teno-inductive properties on AECs
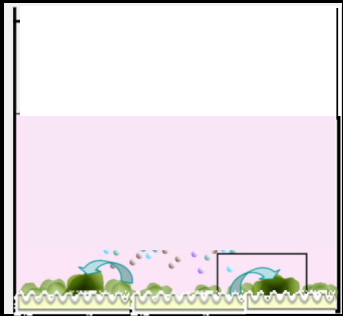
ha-PLGA scaffold teno-inductive properties on AECs
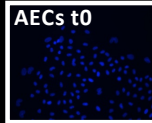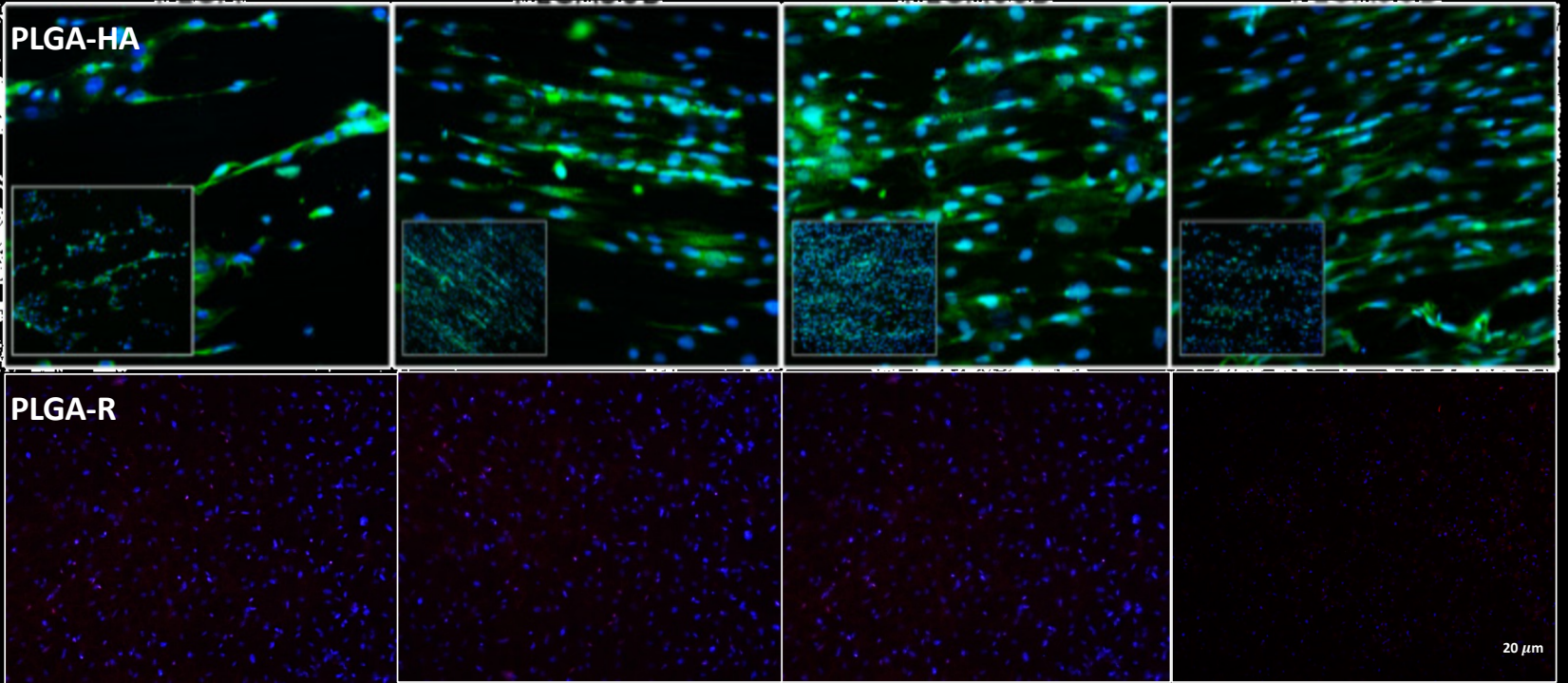
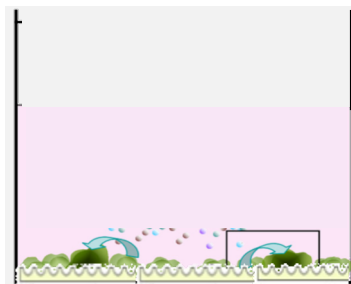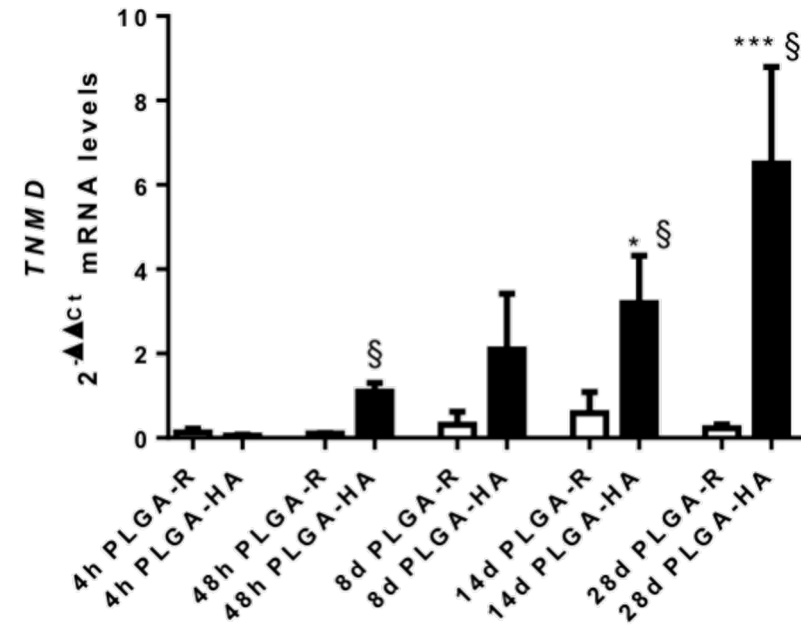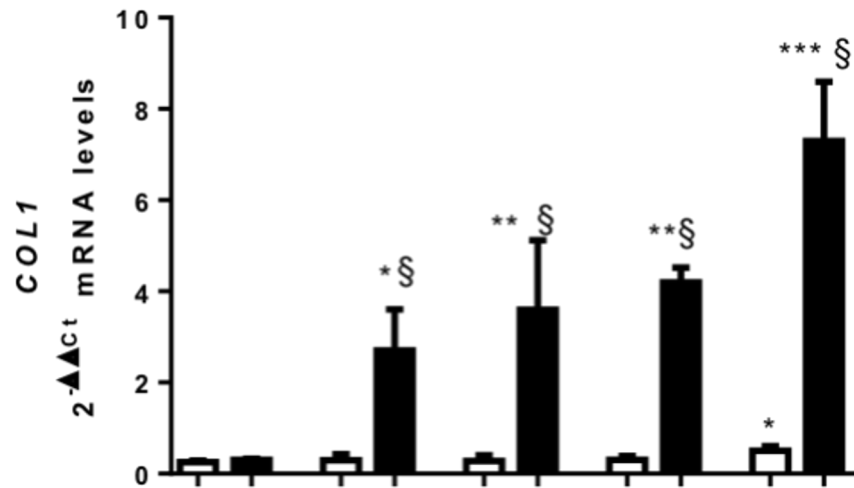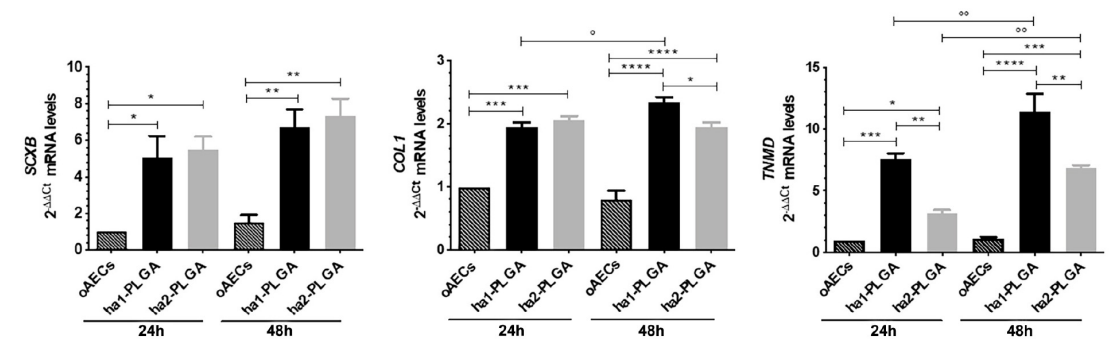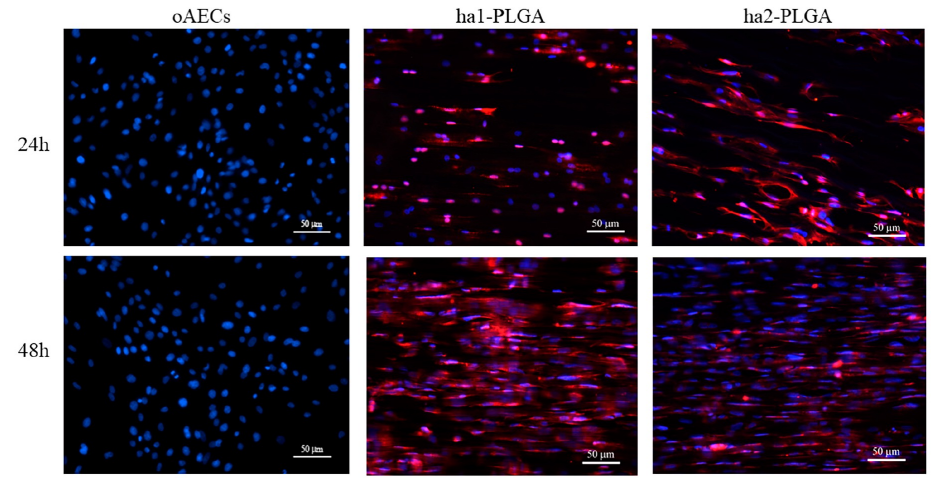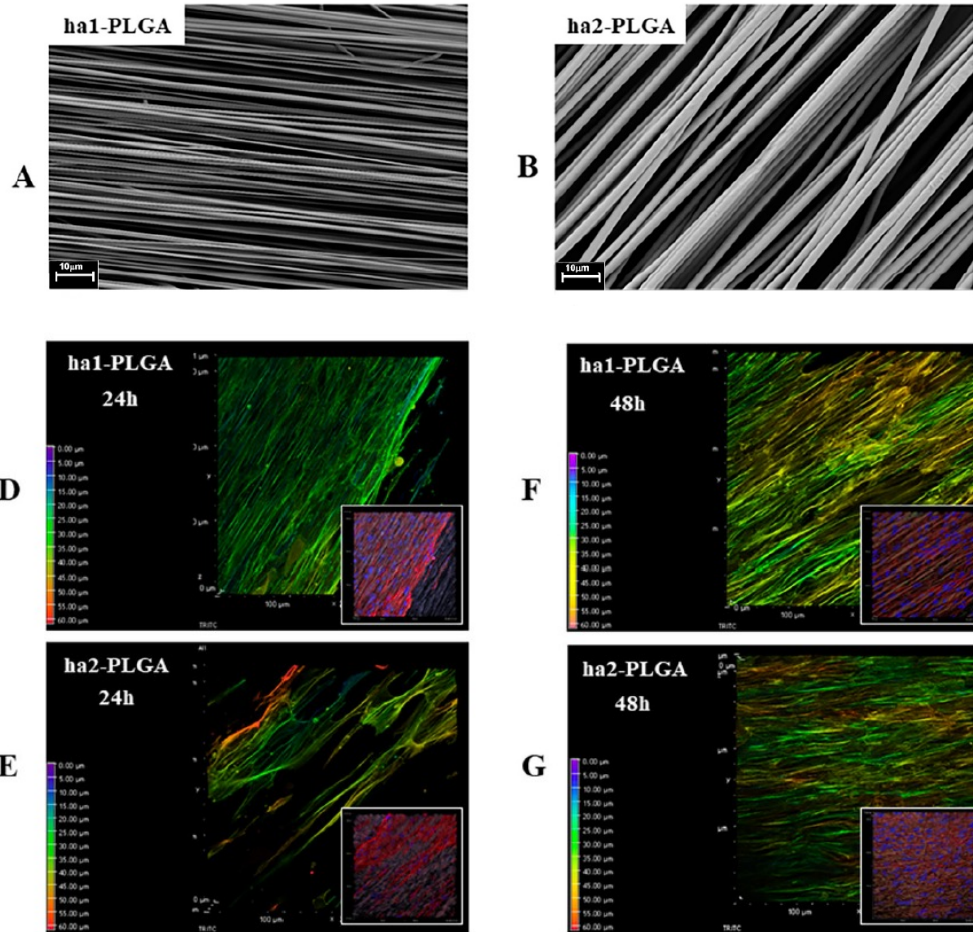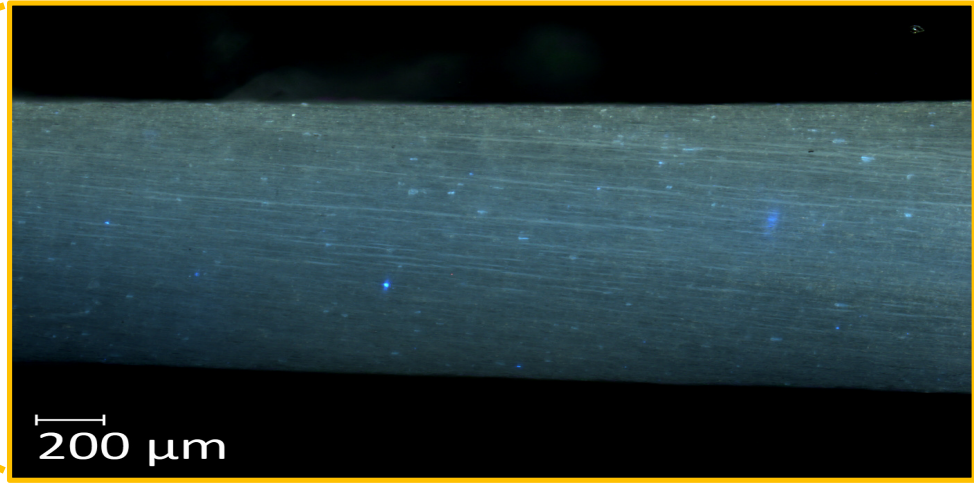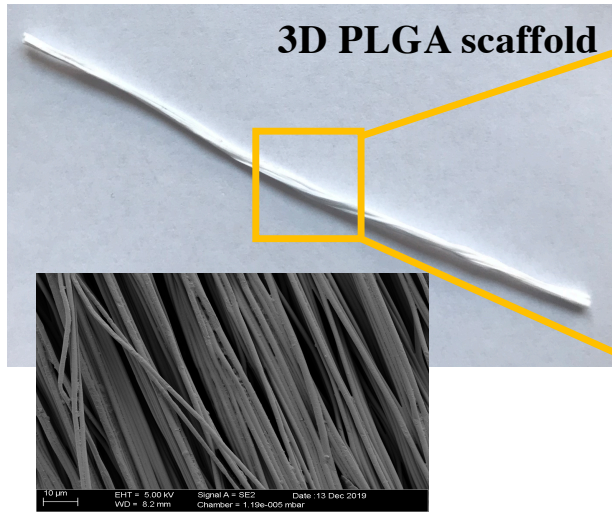# ha-PLGA scaffold teno-inductive properties on AECs

*p<0.01 different values in PLGA-HA vs. 4h
§ p< 0.01 different values between
different scaffold at each time point
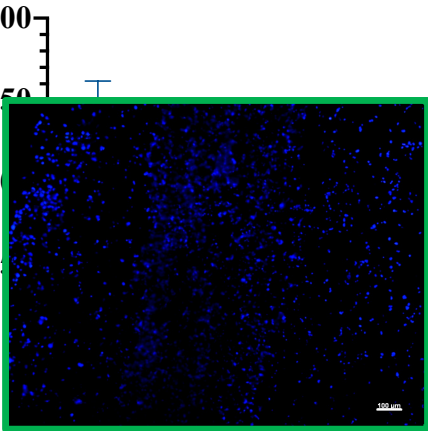
Tendon Tissue Engineering

1.27 ± 0.11 µm (ha1-PLGA) and 2.5 ± 0.27 µm (ha2-PLGA)

Biomimicking Tendon 3D structure
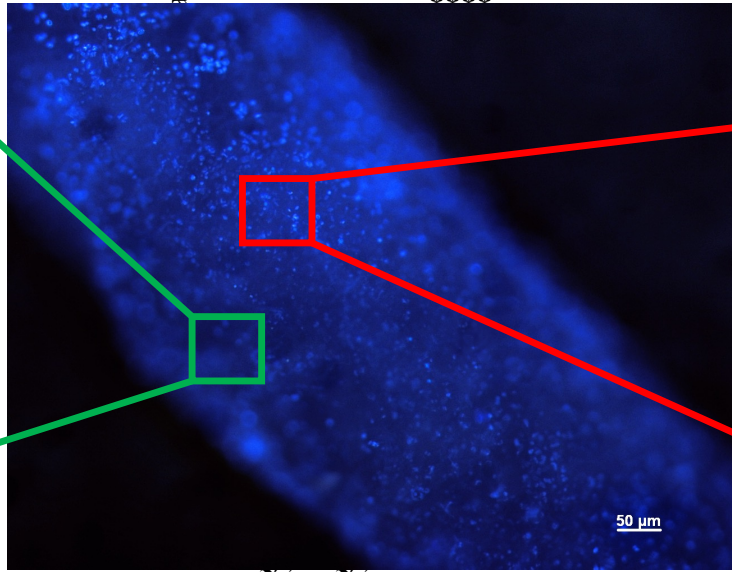
3D PLGA scaffold
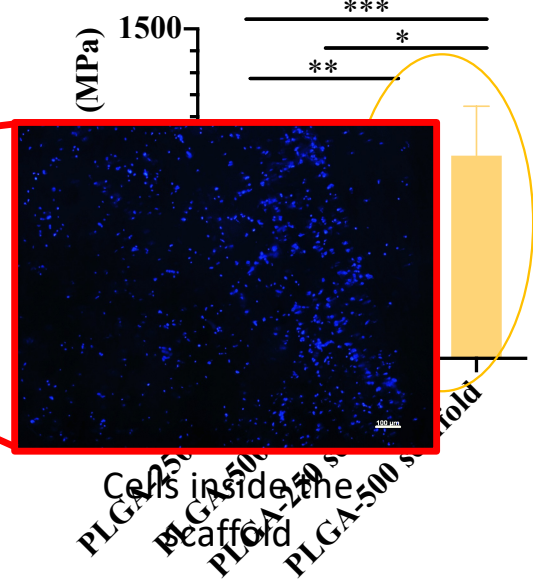
200 μm

Elongation at break (%)

PLGA-250
PLGA-500
PLGA-250 scaffold
PLGA-500 scaffold

Cells on the surface of the scaffold

****
****

(MPa)

1500

***
*
**

PLGA-250
PLGA-500
PLGA-250 scaffold
PLGA-500 scaffold

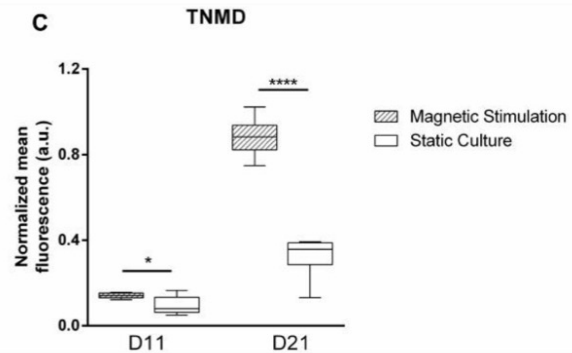Cells inside the scaffold

50 μm

18

Tendon Tissue Engineering
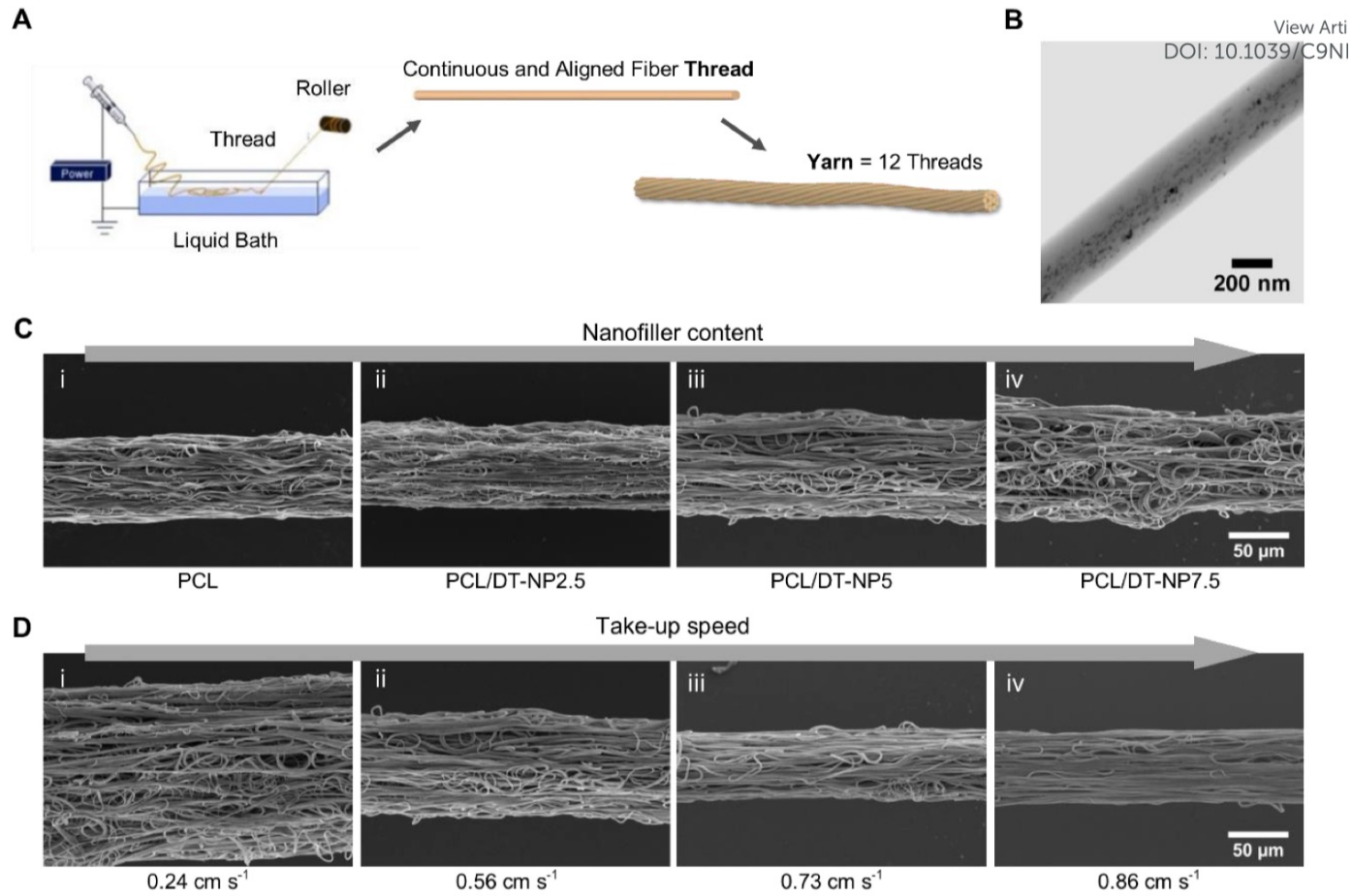
A. R. Tomás et al., Nanoscale, 2019, DOI: 10.1039/C9NR04355A.

Tendon Tissue Engineering

A — Seeding of hASCs → Magnetic Stimulation → Assessment of Tenogenic Differentiation

B — Static Culture / Magnetic Stimulation, F-Actin, Day 11, Day 21, 100 µm, 50 µm

View
DOI: 10.1039/C

Tendon Tissue Engineering

A. R. Tomás et al., Nanoscale, 2019, DOI: 10.1039/C9NR04355A.