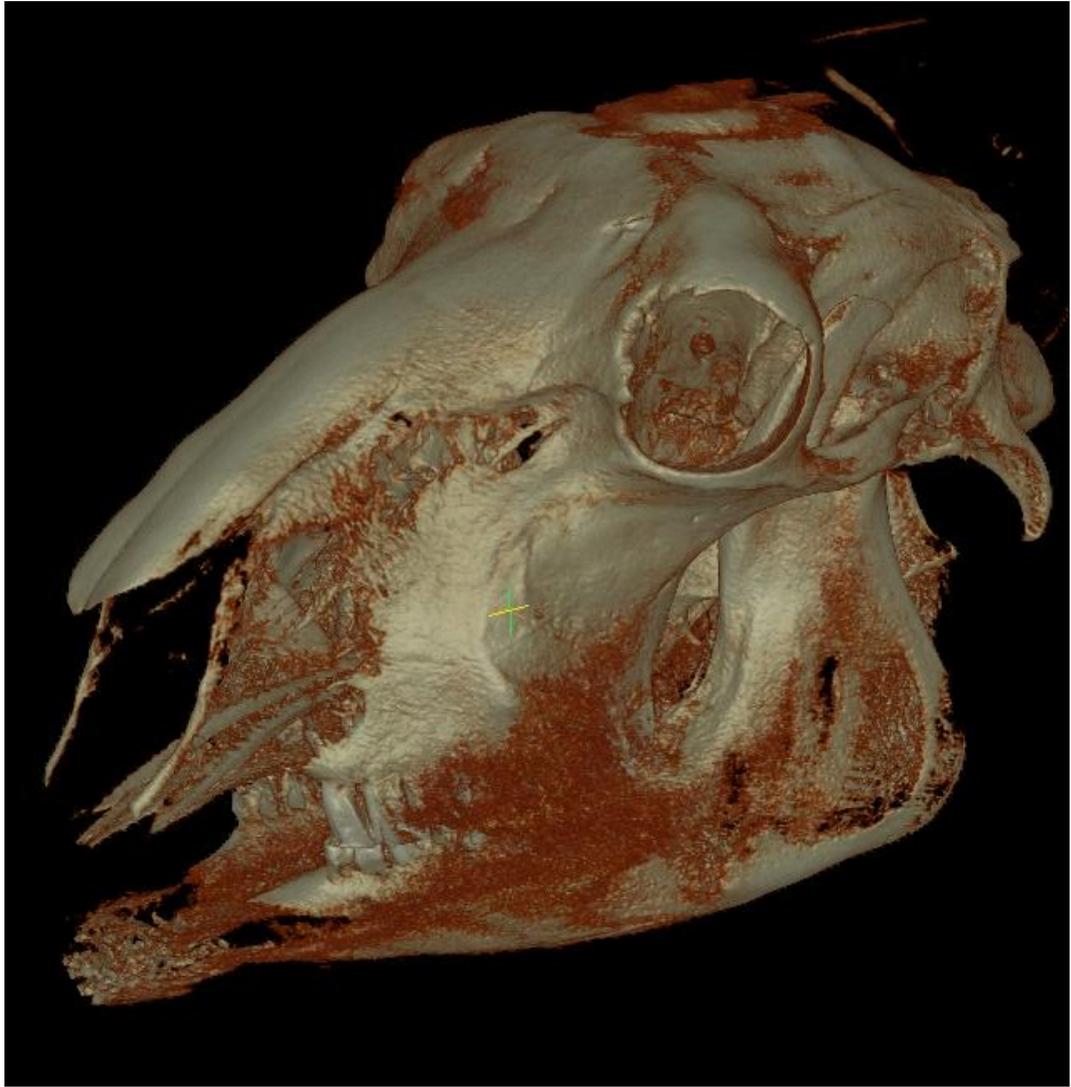
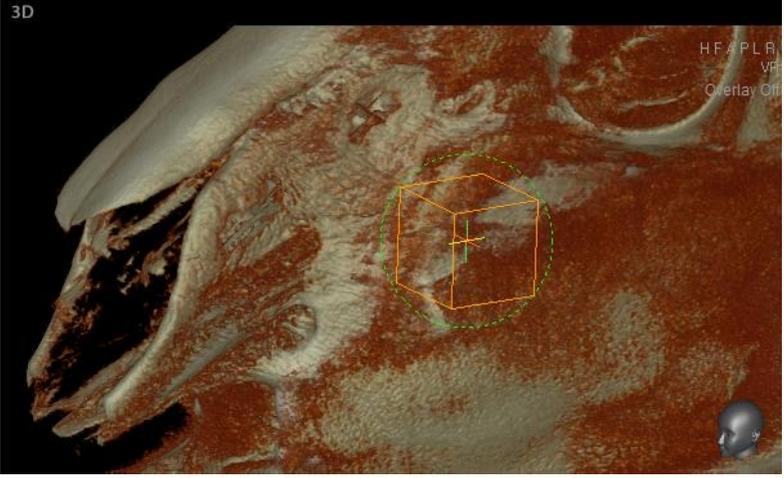
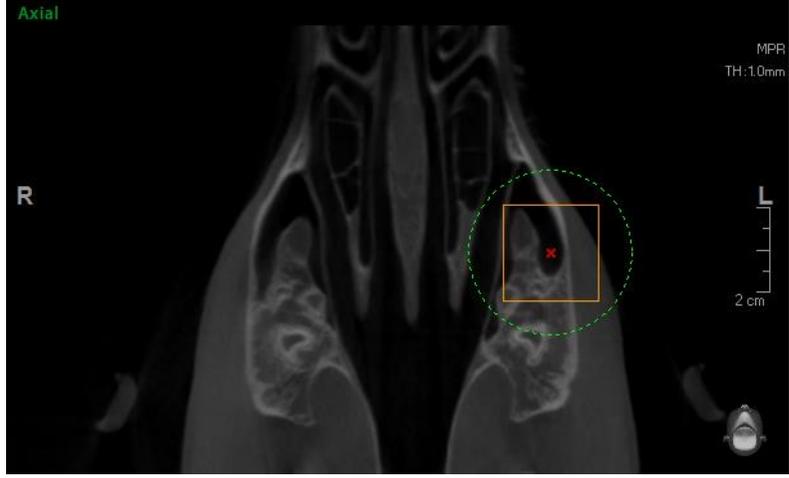
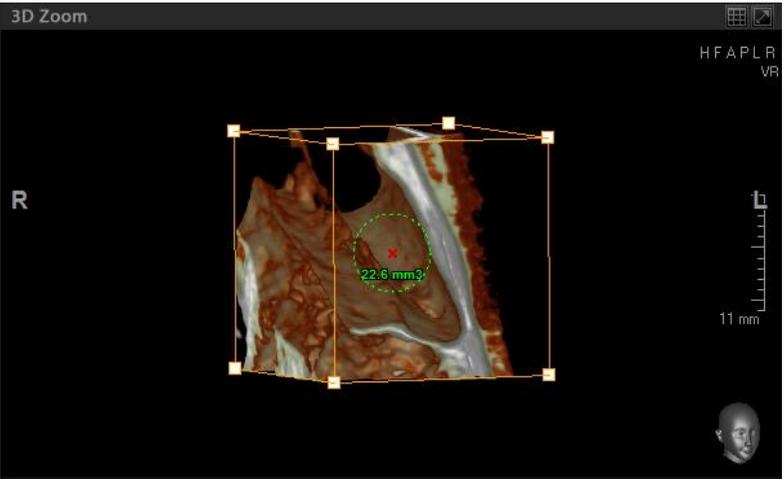
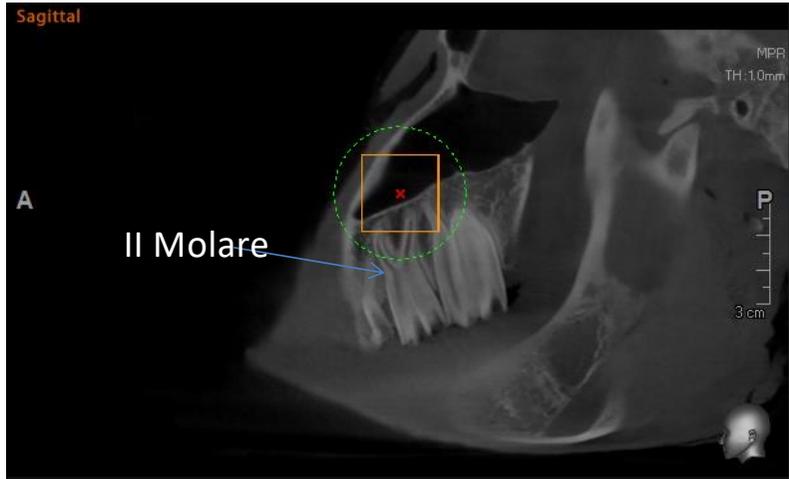
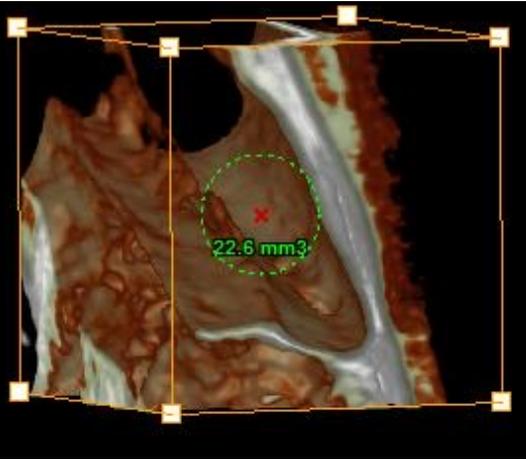


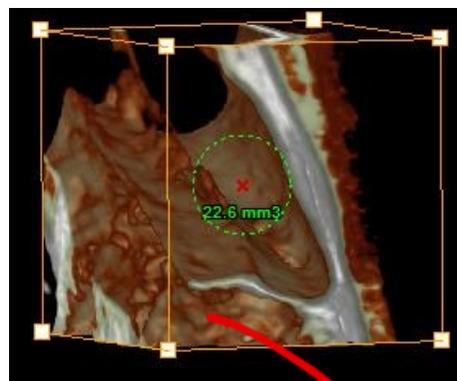
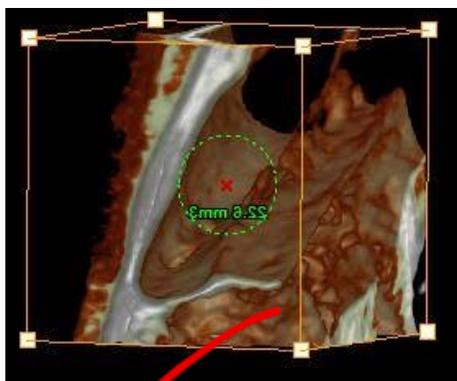
AECs Transplantation settings

AECs' animal source	Host animal	Type of transplantation
sheep	sheep	Allo-transplantation
sheep	horse	Xeno-transplantation
human	sheep	Xeno-transplantation

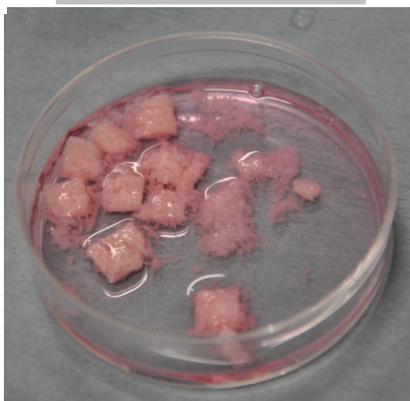




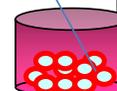
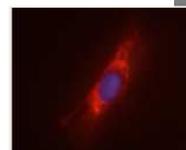




RegenOss®

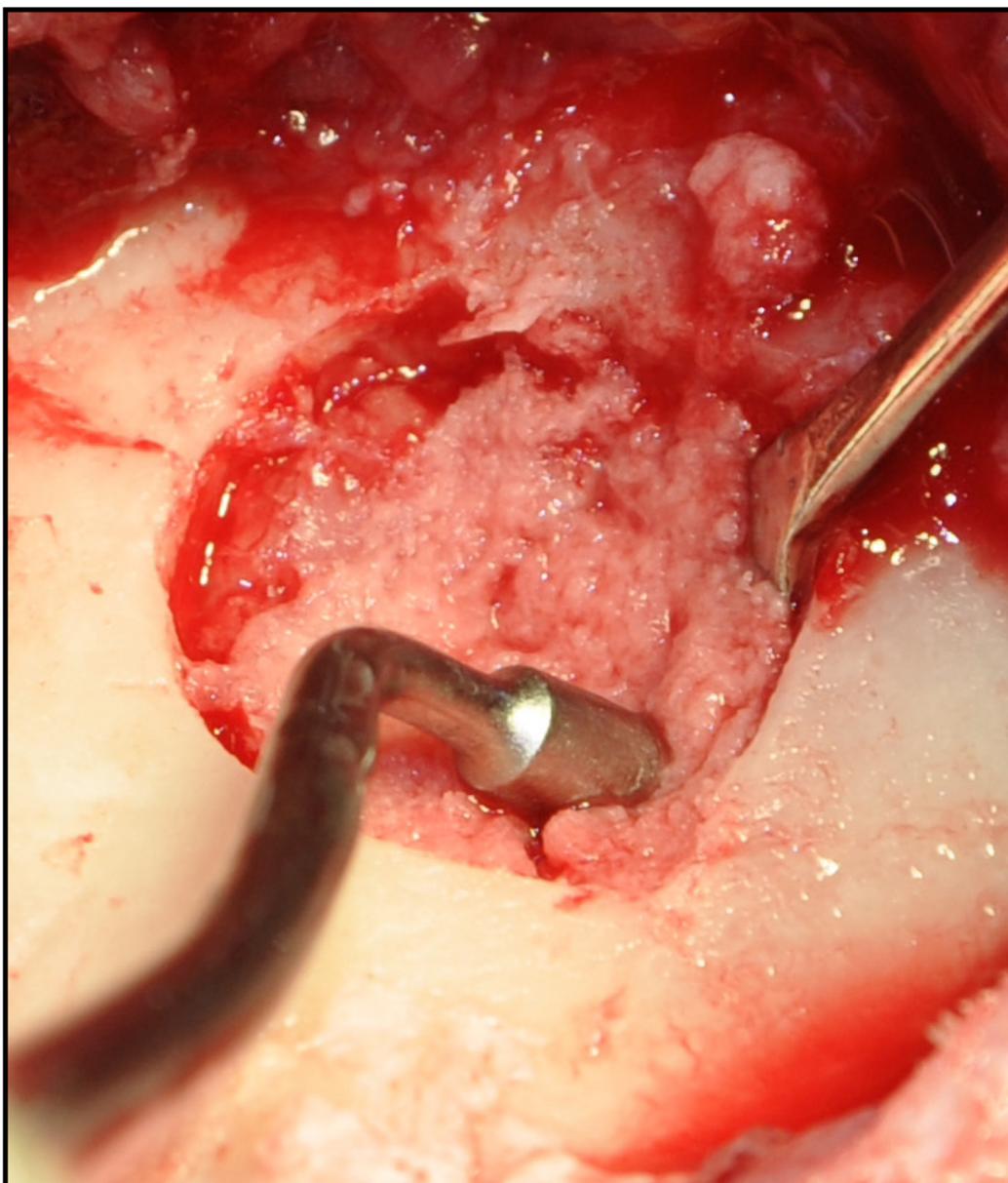


RegenOss®+AFMC



PKH26 marcate



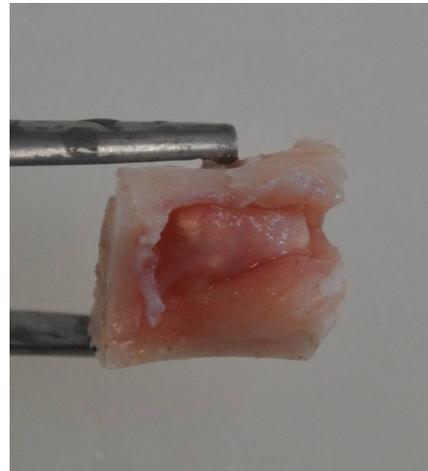




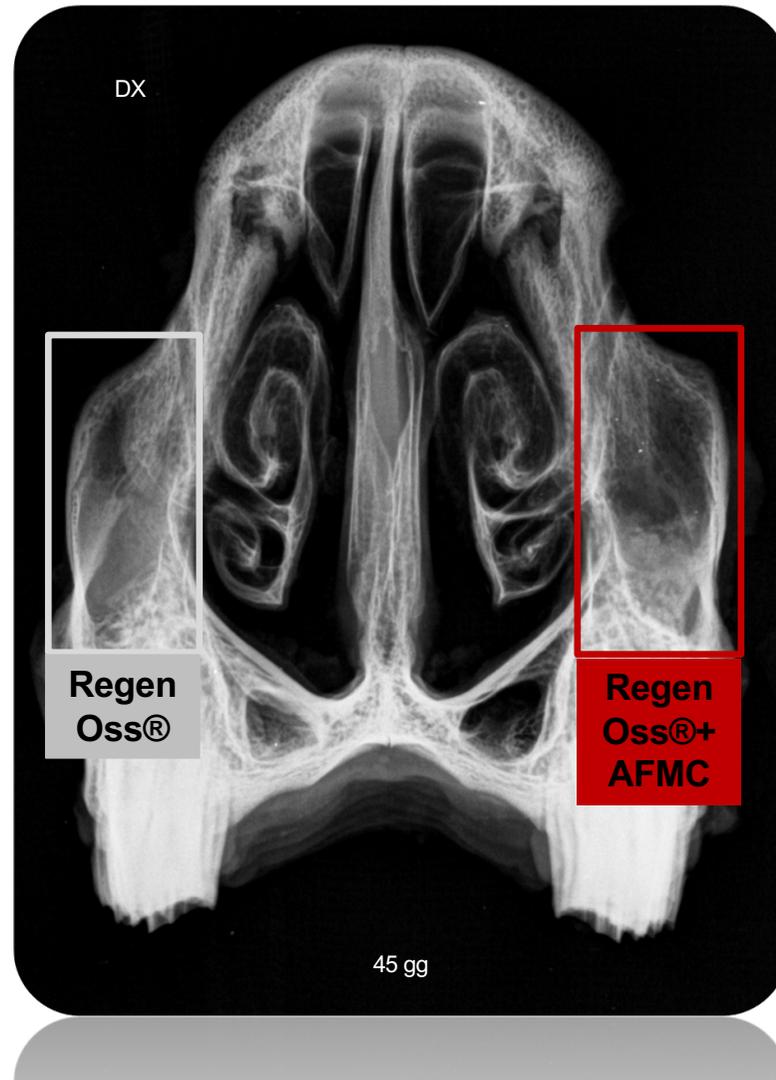
Espiante



45 e 90 giorni

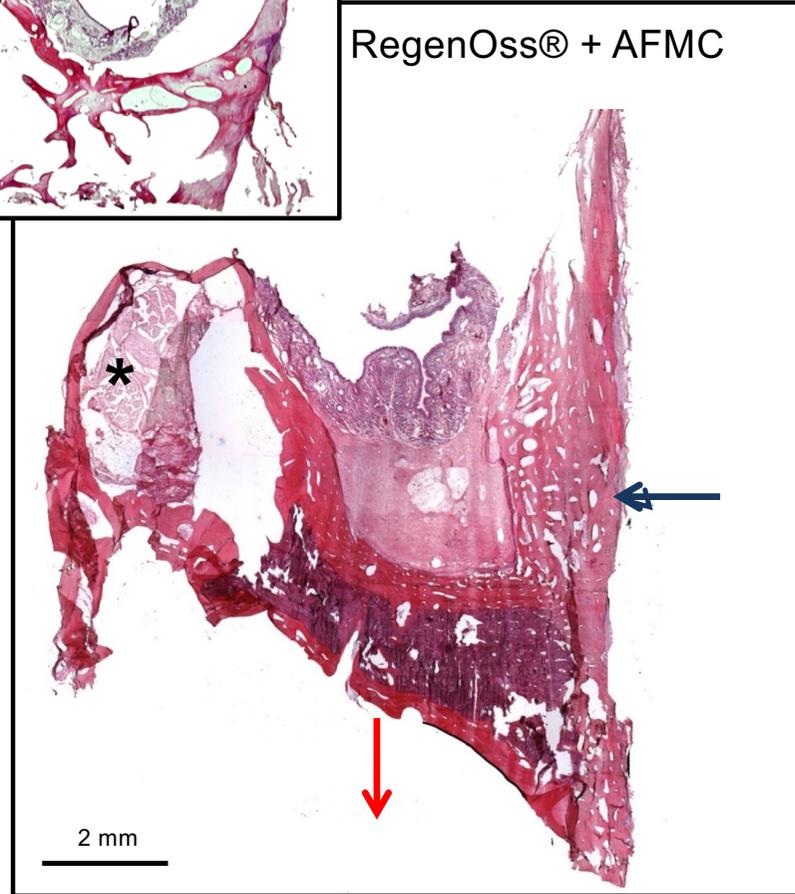
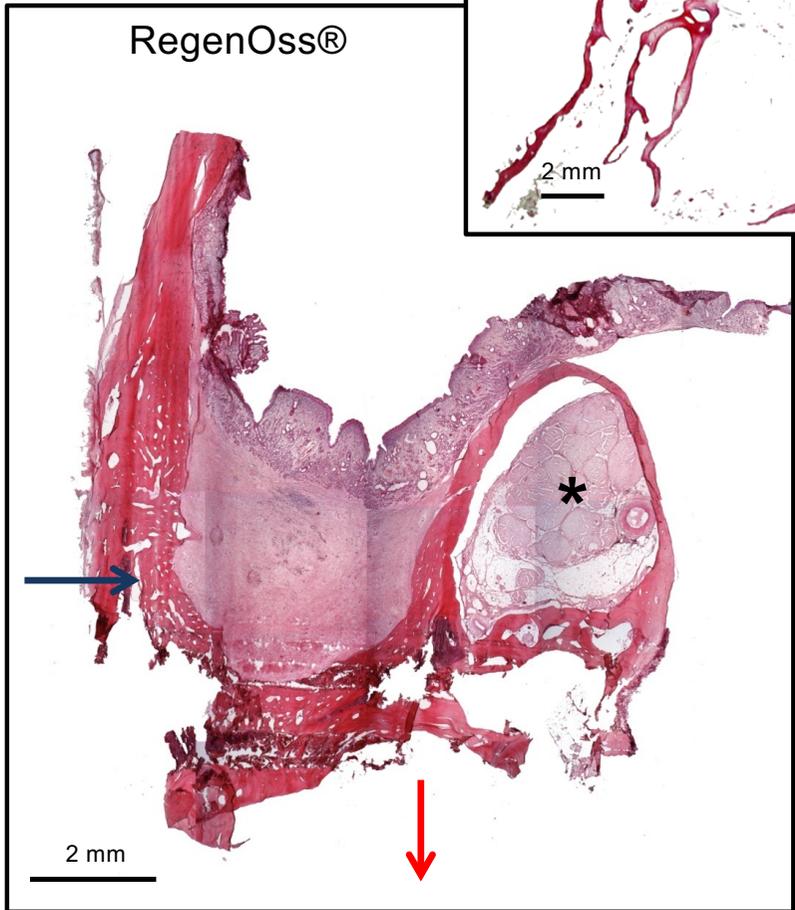
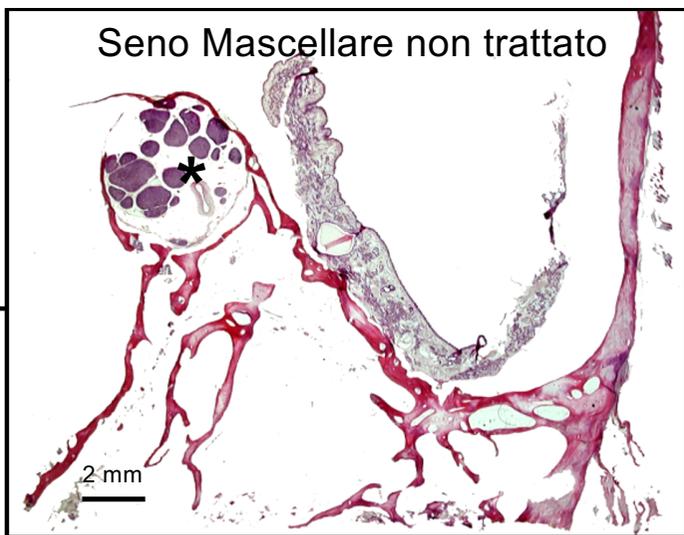


Esame Radiografico

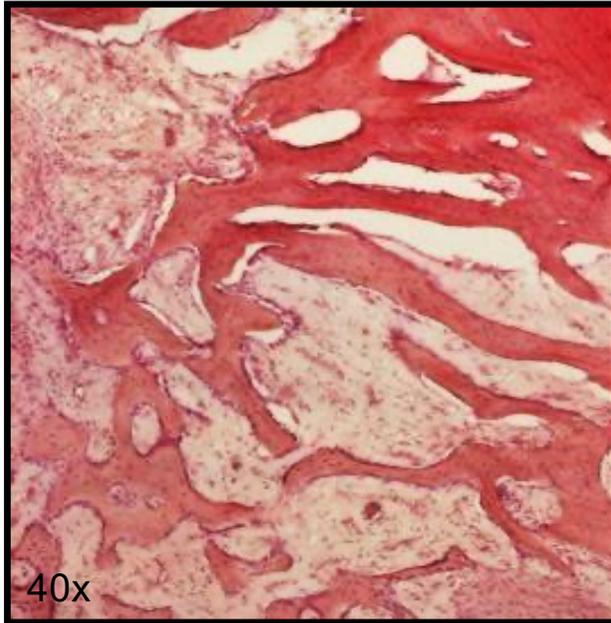


Osteorigenerazione

HE

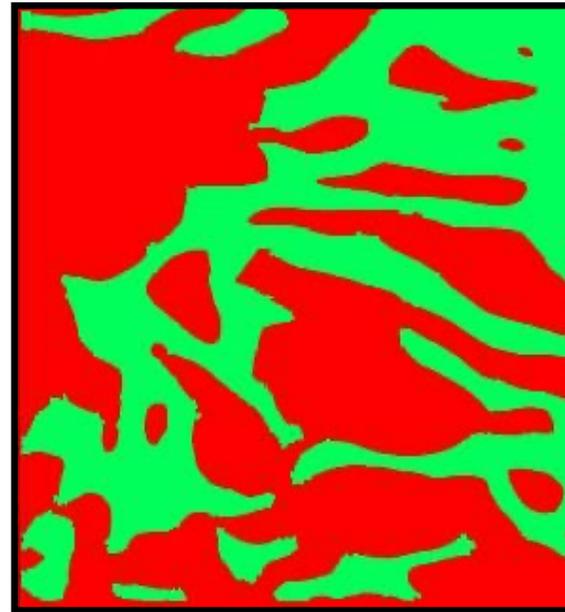


Osteorigenerazione



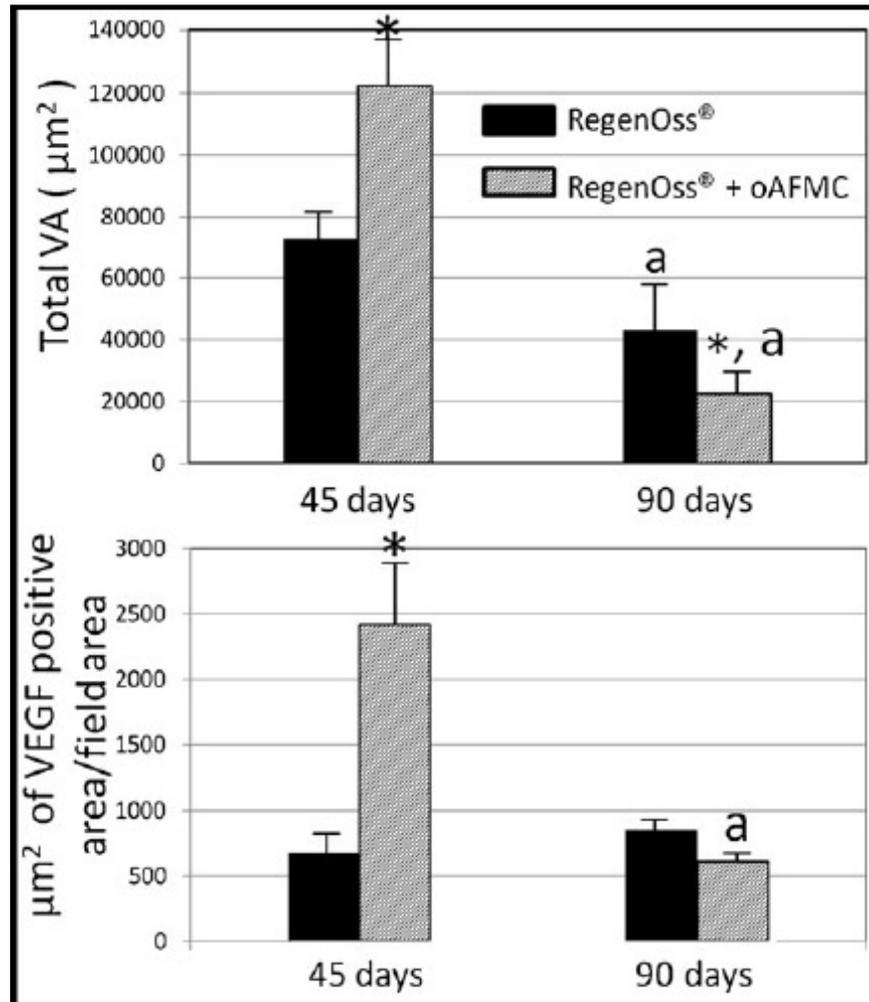
40x

HE



conversione digitale

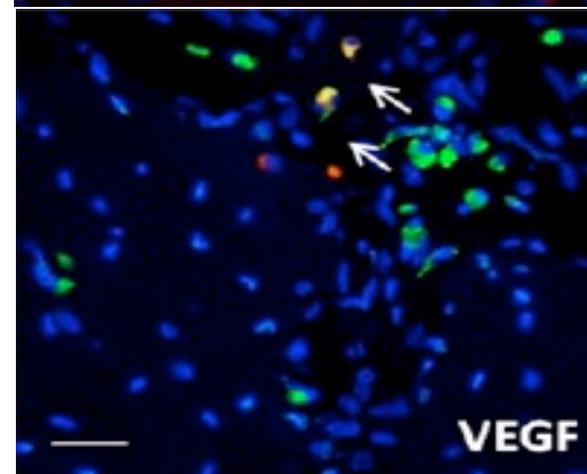
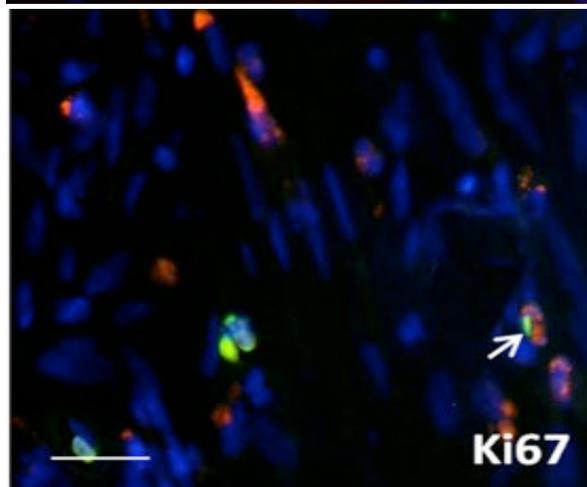
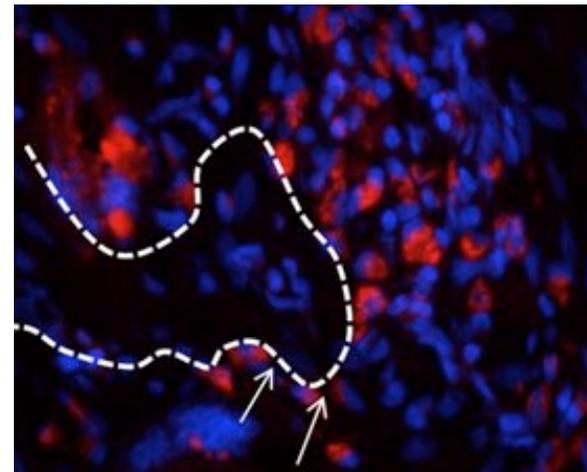
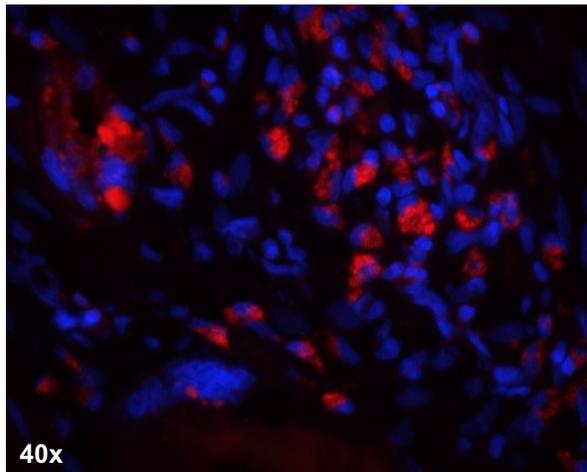
Rimodellamento vascolare

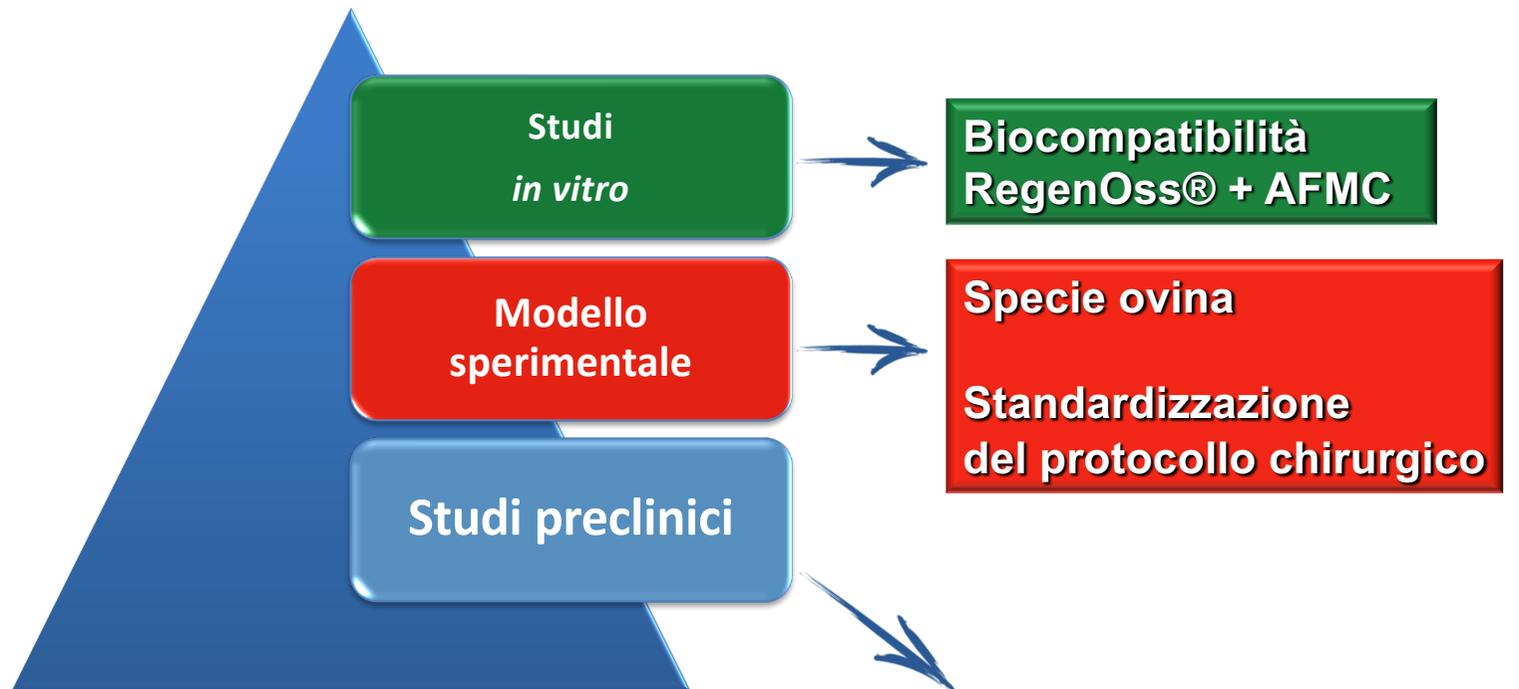


* p<0.05

^a p<0.05

Ritrovamento delle AFMC nel tessuto impiantato



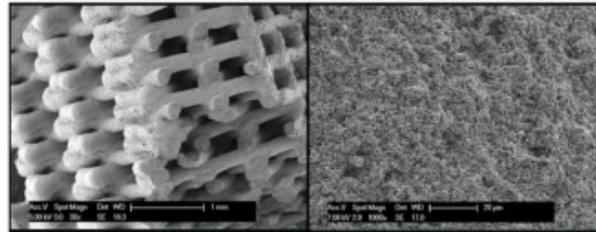


Le proprietà osteoinduttive del RegenOss® sono migliorate in seguito all'ingegnerizzazione con le AFMC:

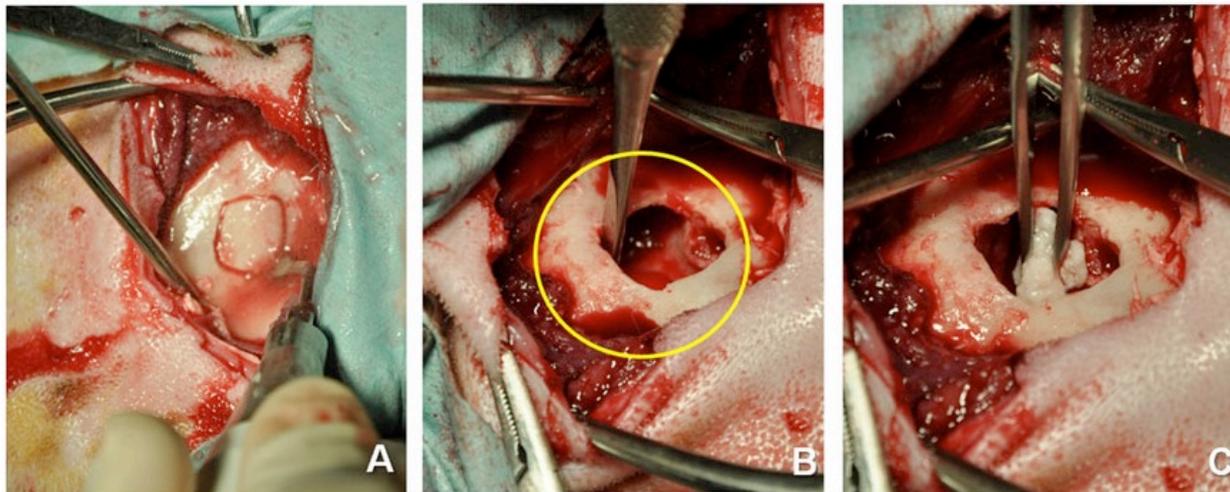
1. Immunomodulazione
2. Neodeposizione ossea
3. Rimodellamento dei vasi sanguigni e modulazione del processo infiammatorio (VEGF)
4. Effetto paracrino

L'ovino come modello preclinico del rialzo del seno mascellare

oAEC+PKH26

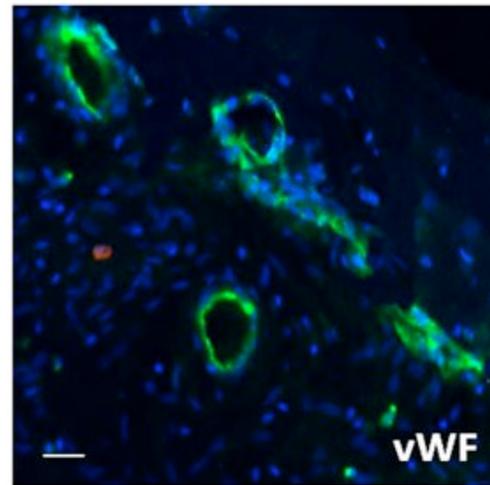
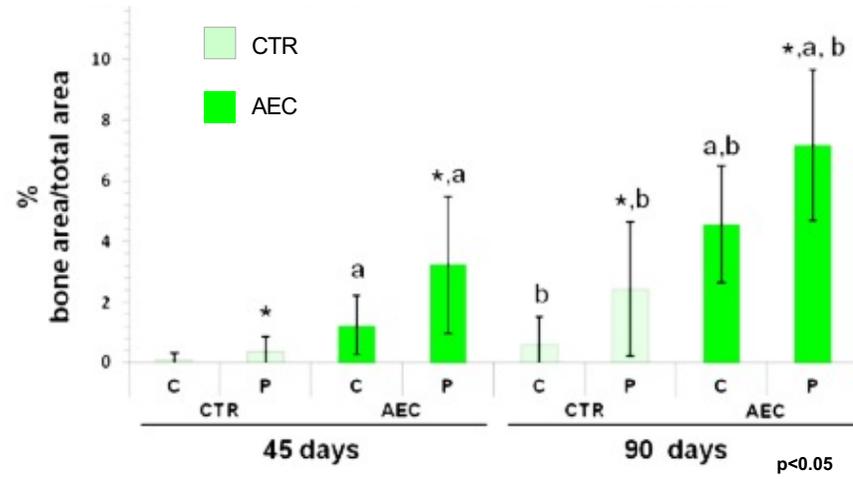
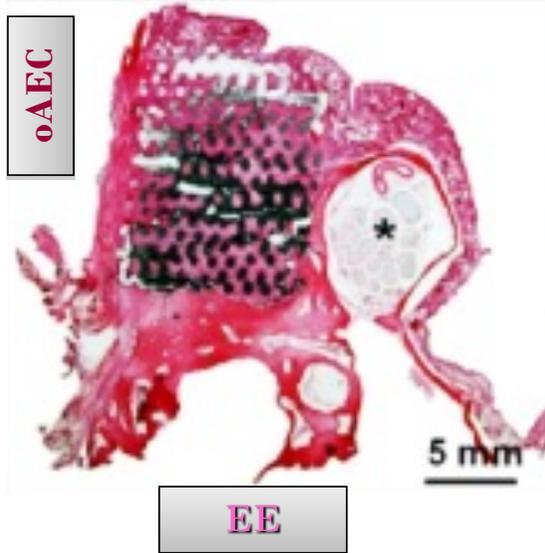


ALLOTRAPIANTO

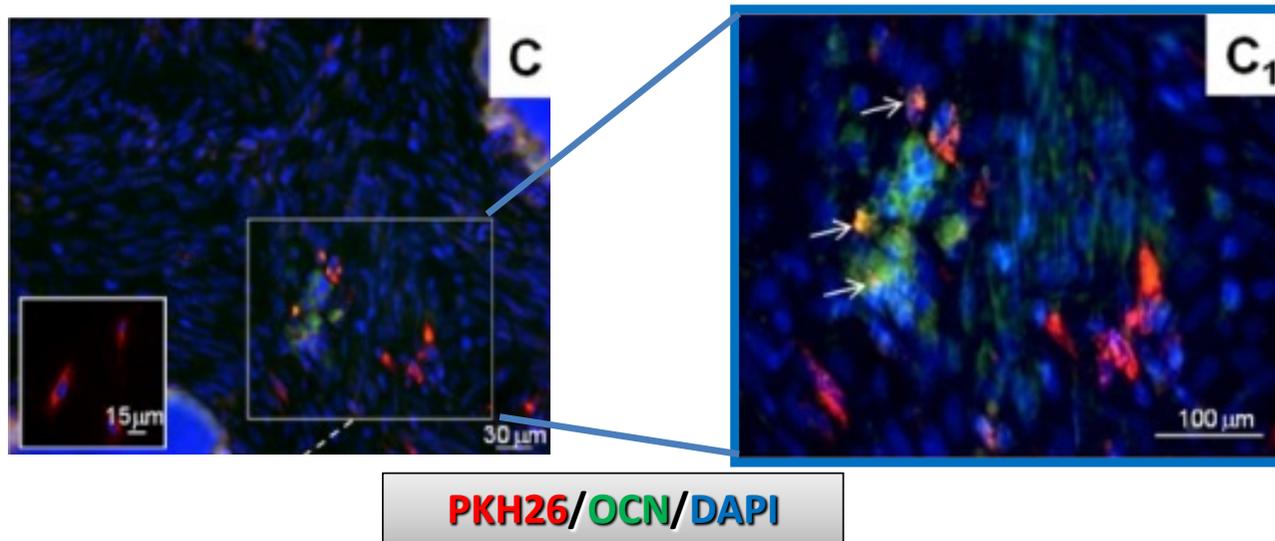
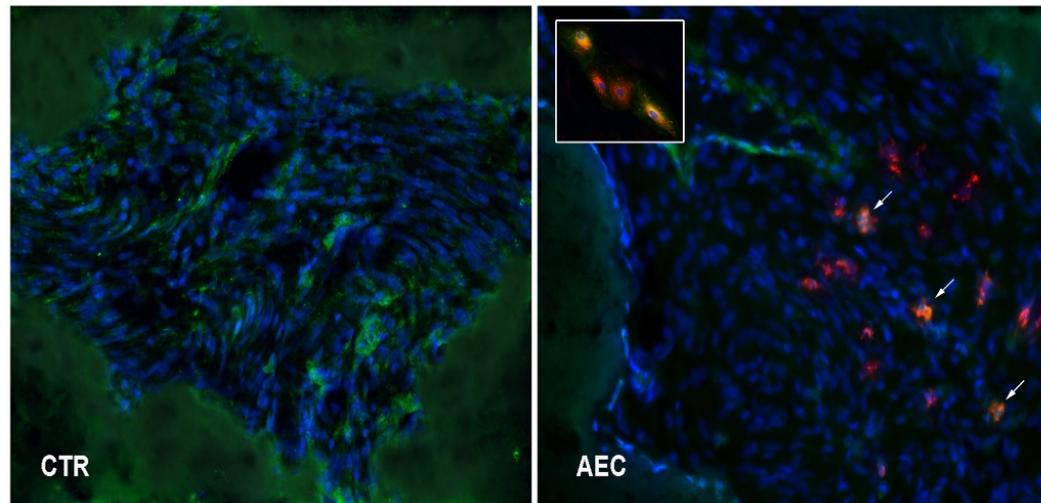


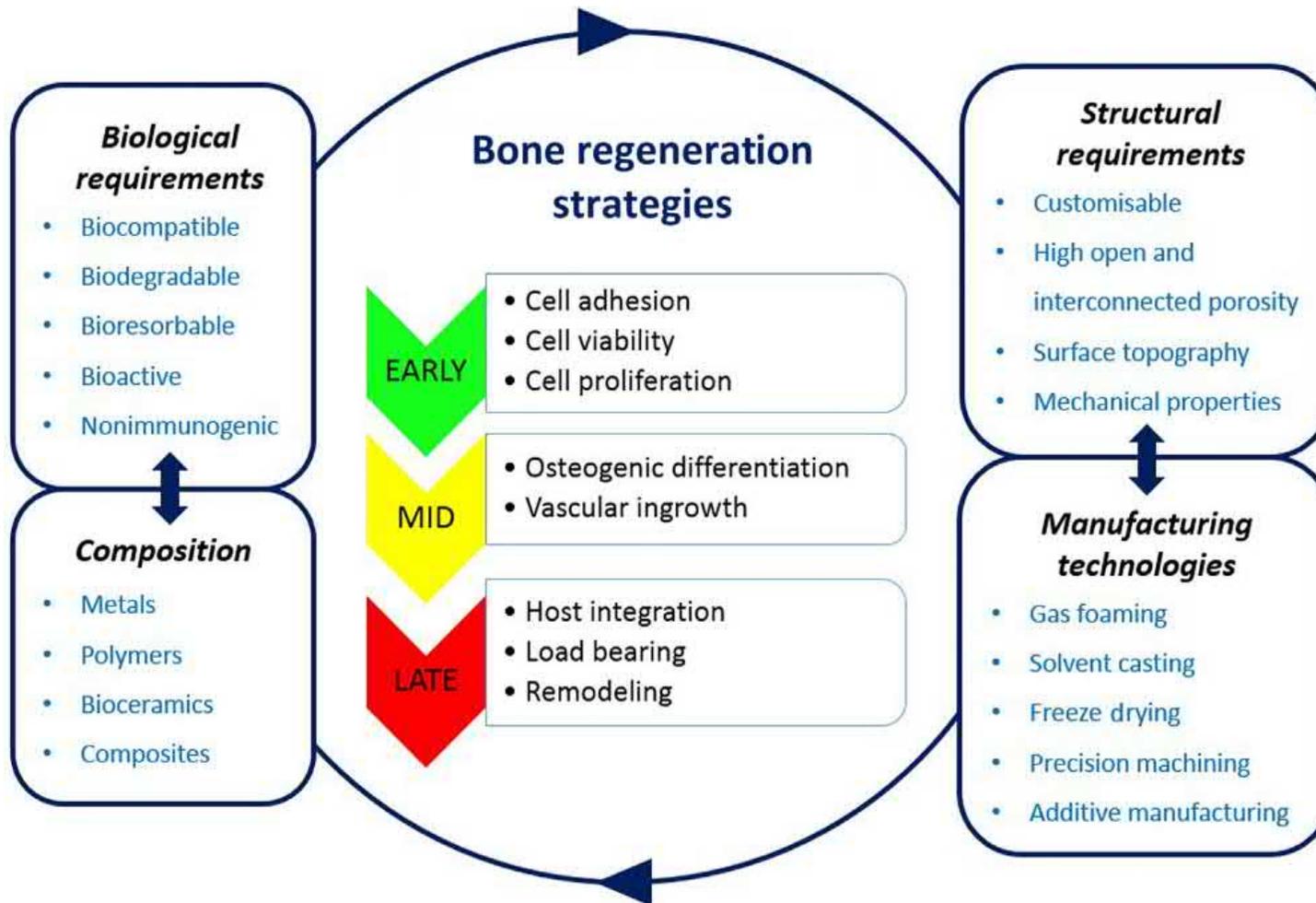
Barboni et al. PLoSOne (2013)

Integrazione dello scaffold e Rigenerazione ossea



Le AEC trapiantate nel seno mascellare: qual è il loro destino?

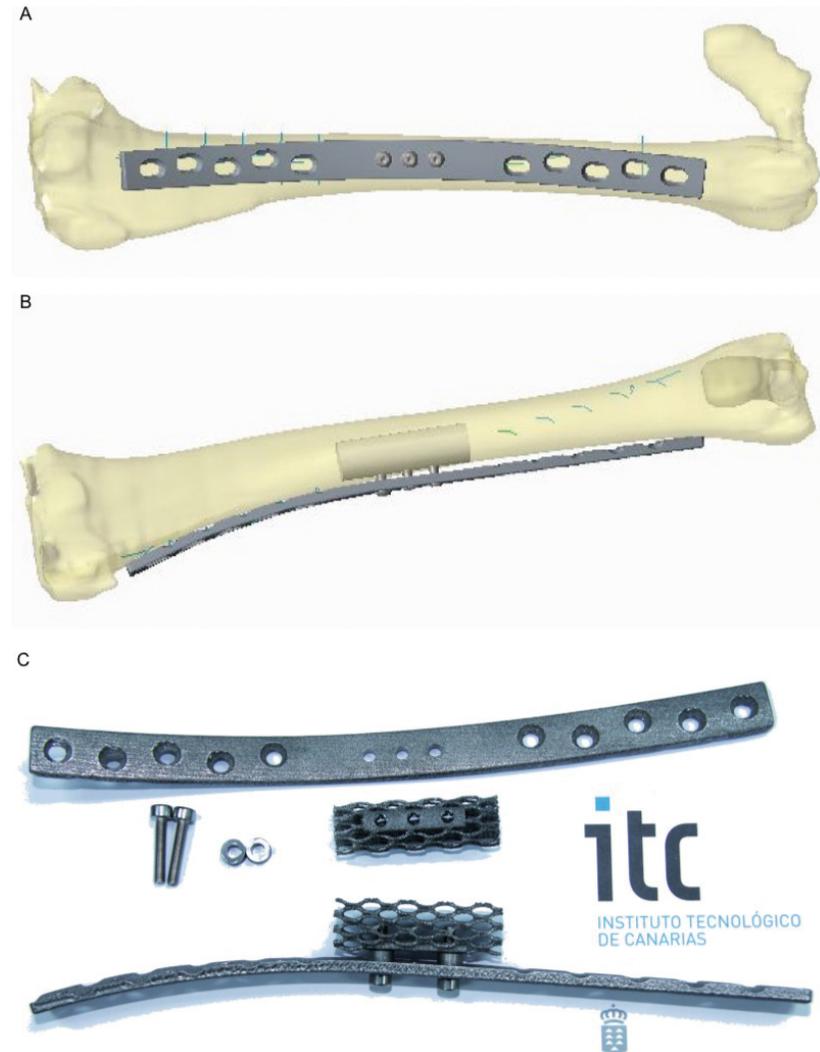




Bone tissue engineering

3D Biomimetic Porous Titanium (Ti₆Al₄V ELI) Scaffolds for Large Bone Critical Defect Reconstruction: An Experimental Study in Sheep

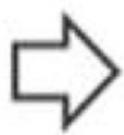
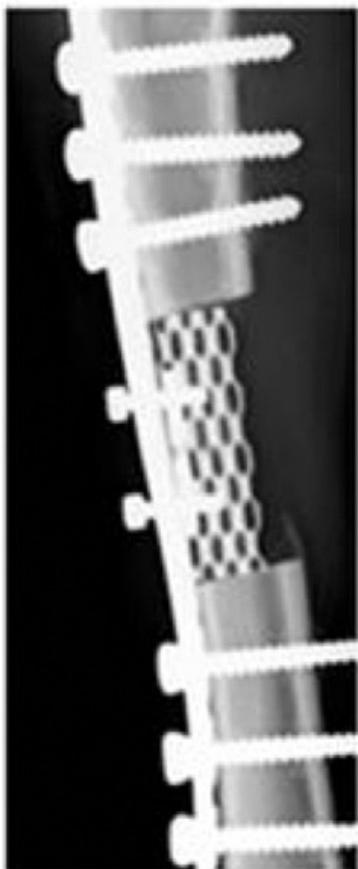
Animals **2020**, *10*, 1389; doi:10.3390/ani10081389



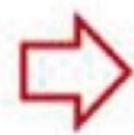
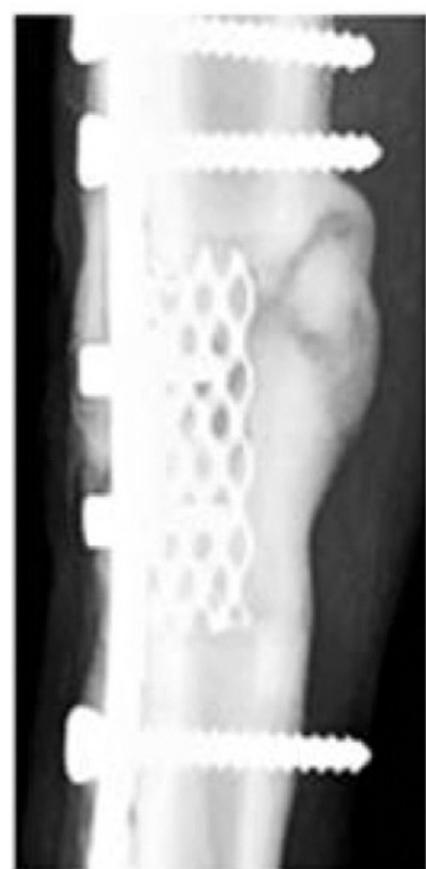
A



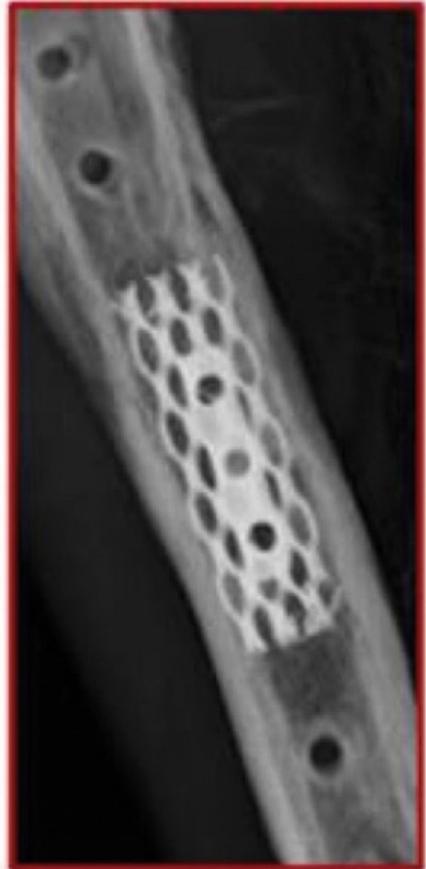
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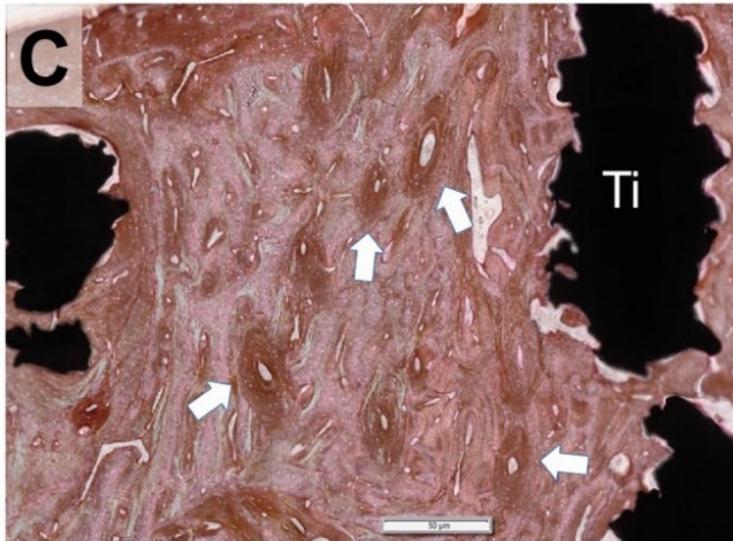
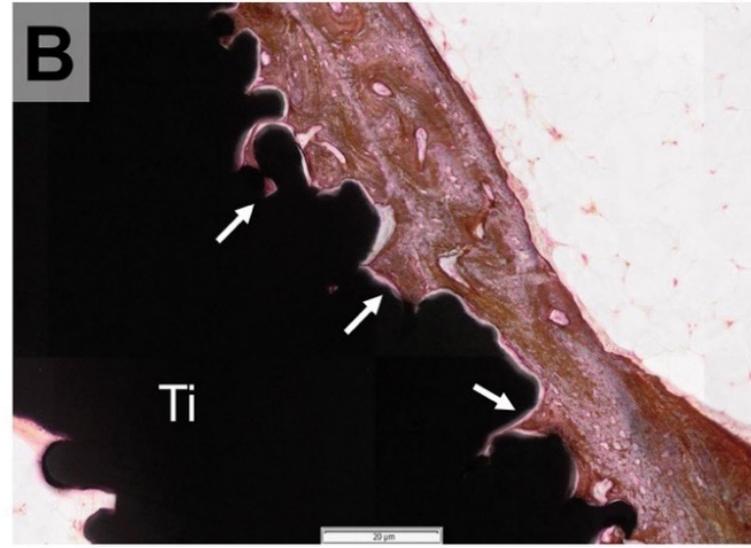
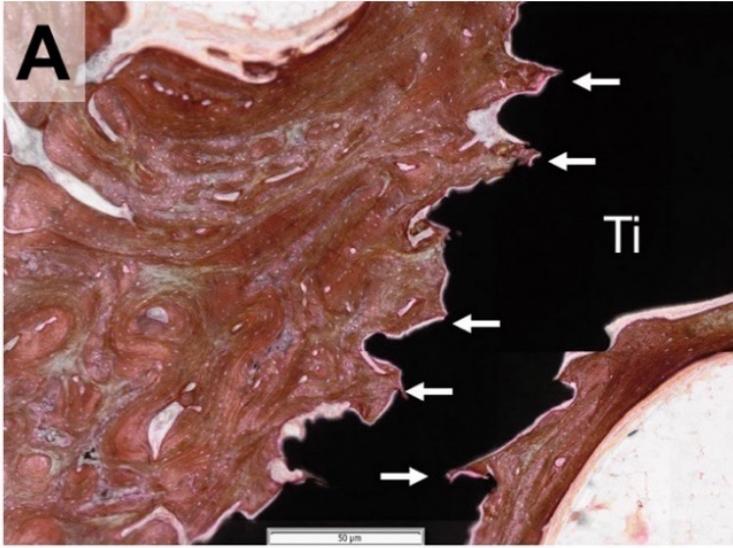


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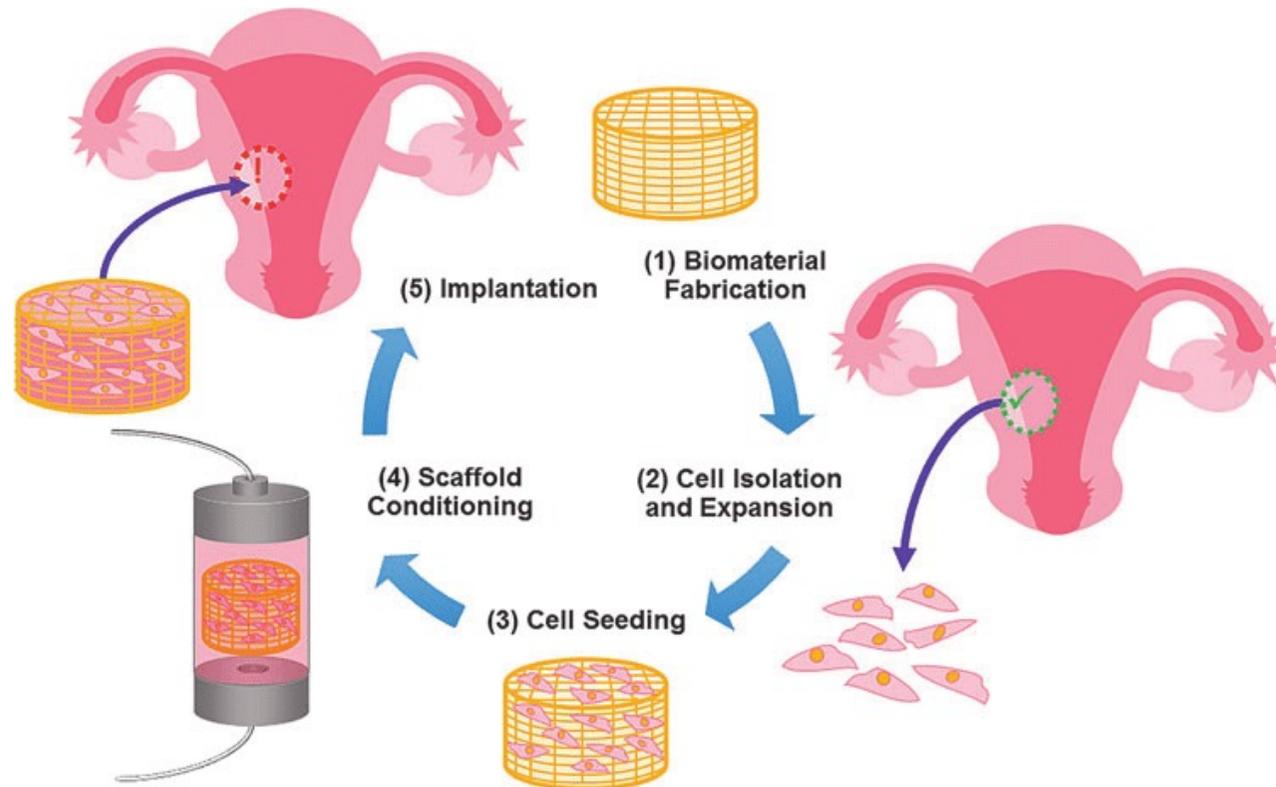


D





REPROTEN: Reproductive tissue engineering



In questo articolo sono stati fabbricati scaffold attraverso l'elettrofilatura e utilizzati come sistema 3D per la coltura dei follicoli ovarici di suino.

- 1) Follicoli ovarici di suino;
- 2) Elettrofilatura del biopolimero;
- 3) PCL e PCL/gel;

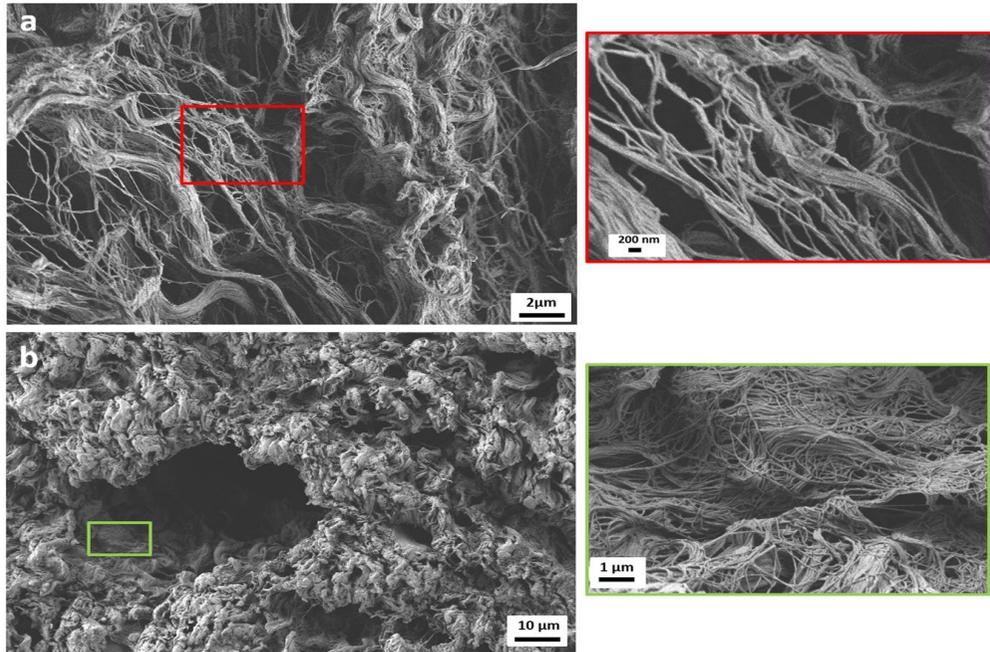


Fig.6 Micrografie SEM della corticale (a) e della midollare (b) del tessuto ovarico suino (Liverani L. et al., 2019, Nature).

SCIENTIFIC REPORTS

OPEN **Electrospun patterned porous scaffolds for the support of ovarian follicles growth: a feasibility study**

Received: 10 September 2018
Accepted: 10 December 2018

Liliana Liverani¹, Nathalie Raffel², Amir Fattahi², Alexander Preis¹, Inge Hoffmann², Aldo R. Boccaccini¹, Matthias W. Beckmann² & Ralf Dittrich²

Fig.5 Liverani L. et al., 2019, (Nature.com/scientificreports).

Sono stati utilizzati follicoli ovarici suini isolati dalle ovaie. Rappresentano il giusto compromesso per eseguire *test in vitro* su animali di grandi dimensioni e con il periodo di maturazione del follicolo paragonabile all'uomo.

Sopravvivenza dei follicoli ovarici sugli scaffold

La vitalità è stata valutata dopo 10 giorni di coltura sugli scaffold.

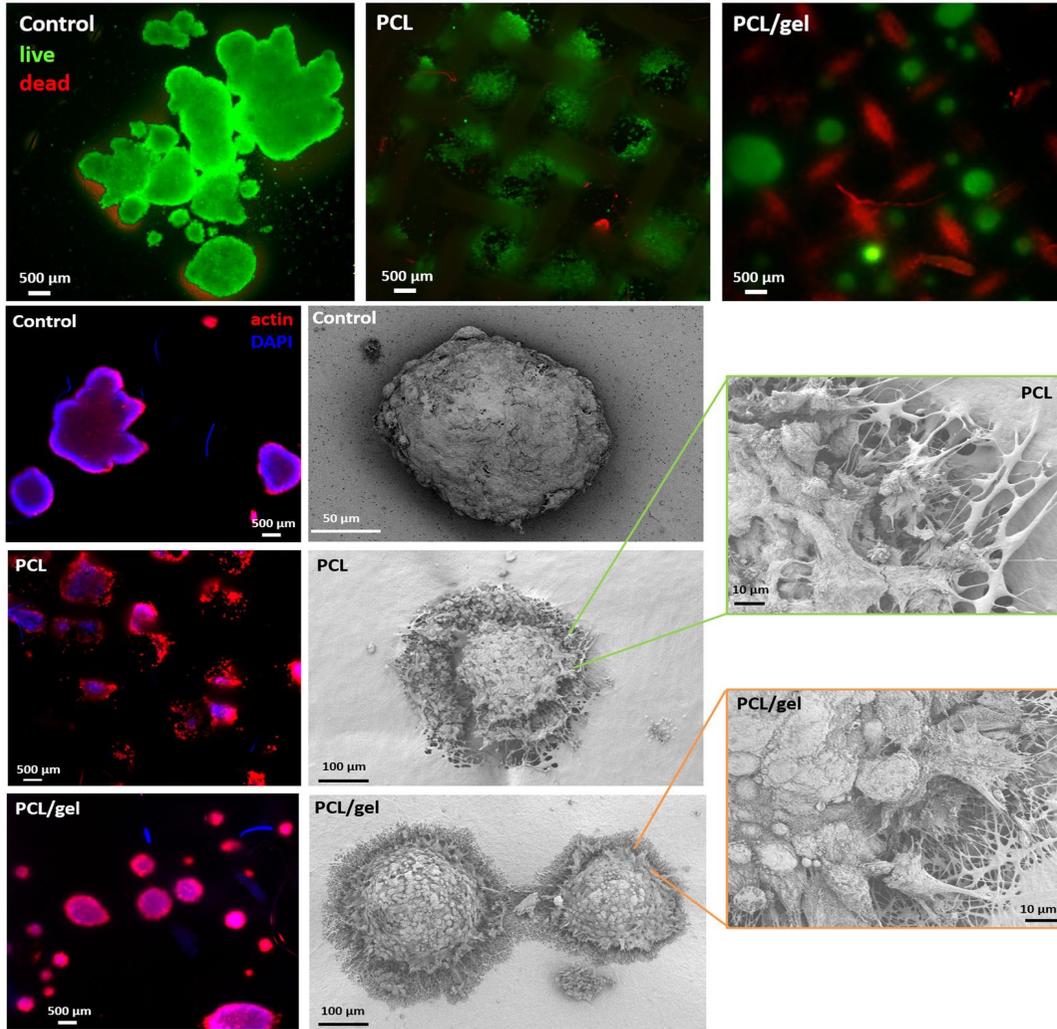


Fig.10 (Liverani L. et al., 2019, Nature).

I test LIVE/DEAD hanno mostrato un numero elevato di follicoli ovarici vitali (in verde).

Su campioni PCL, è possibile notare che il segnale verde è in corrispondenza dei pori della struttura della rete di fibre elettrofilate, dimostrando una posizione preferenziale per l'adesione e la crescita dei follicoli ovarici.

L'analisi morfologica dei follicoli ovarici è stata eseguita colorando i filamenti di actina (in rosso) e i nuclei (in blu). Inoltre è stata utilizzata anche l'analisi SEM per valutare l'interazione tra i follicoli ovarici e gli scaffold. Le micrografie SEM mostrano che tutti i follicoli ovarici mantengono la struttura e la forma sferoidale caratteristiche.

Scaffold	Dead GCs* $\leq 1\%$	Dead GCs $< 5\%$	Dead GCs = 5-10%	Dead GCs $> 10\%$	p-value
	n (%)	n (%)	n (%)	n (%)	
PCL	187 (76.64%)	32 (13.11%)	11 (4.51%)	14 (5.74%)	< 0.001 (PCL vs. PCL/gel)
PCL/gel	295 (90.21%)	22 (6.73%)	6 (1.84%)	4 (1.22%)	0.119 (PCL vs. Control)
Control	39 (88.64%)	3 (6.82%)	1 (2.27%)	1 (2.27%)	0.766 (PCL/gel vs. Control)

Tab.1 (Liverani L. et al., 2019, Nature).

Nella Tab.1 viene verificato lo stato di salute dei follicoli ovarici tra PCL, PCL/gel e controllo, dopo 10 giorni di coltura utilizzando il test Kruskal-Wallis.

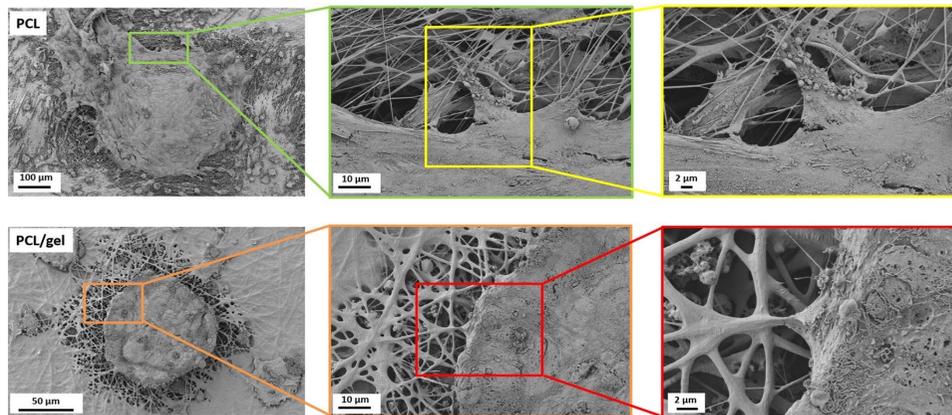


Fig.11 (Liverani L. et al., 2019, Nature).

L'analisi SEM dei follicoli ovarici coltivati per 30 giorni, ha evidenziato che anche per un periodo di tempo più lungo, essi hanno mantenuto le loro caratteristiche principali per entrambi gli scaffold.

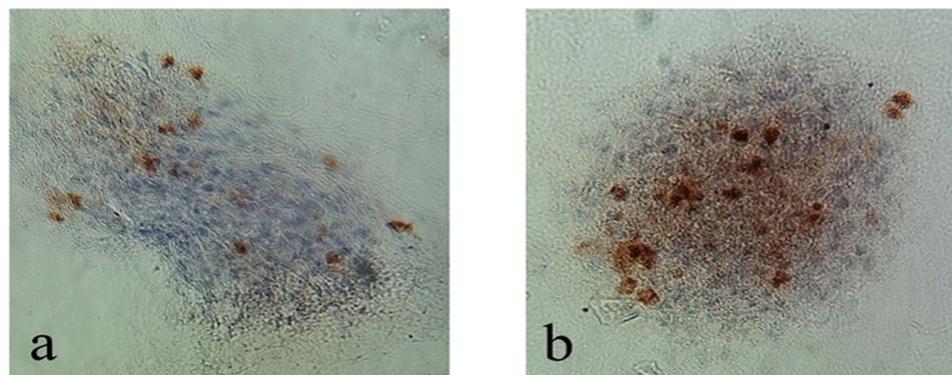
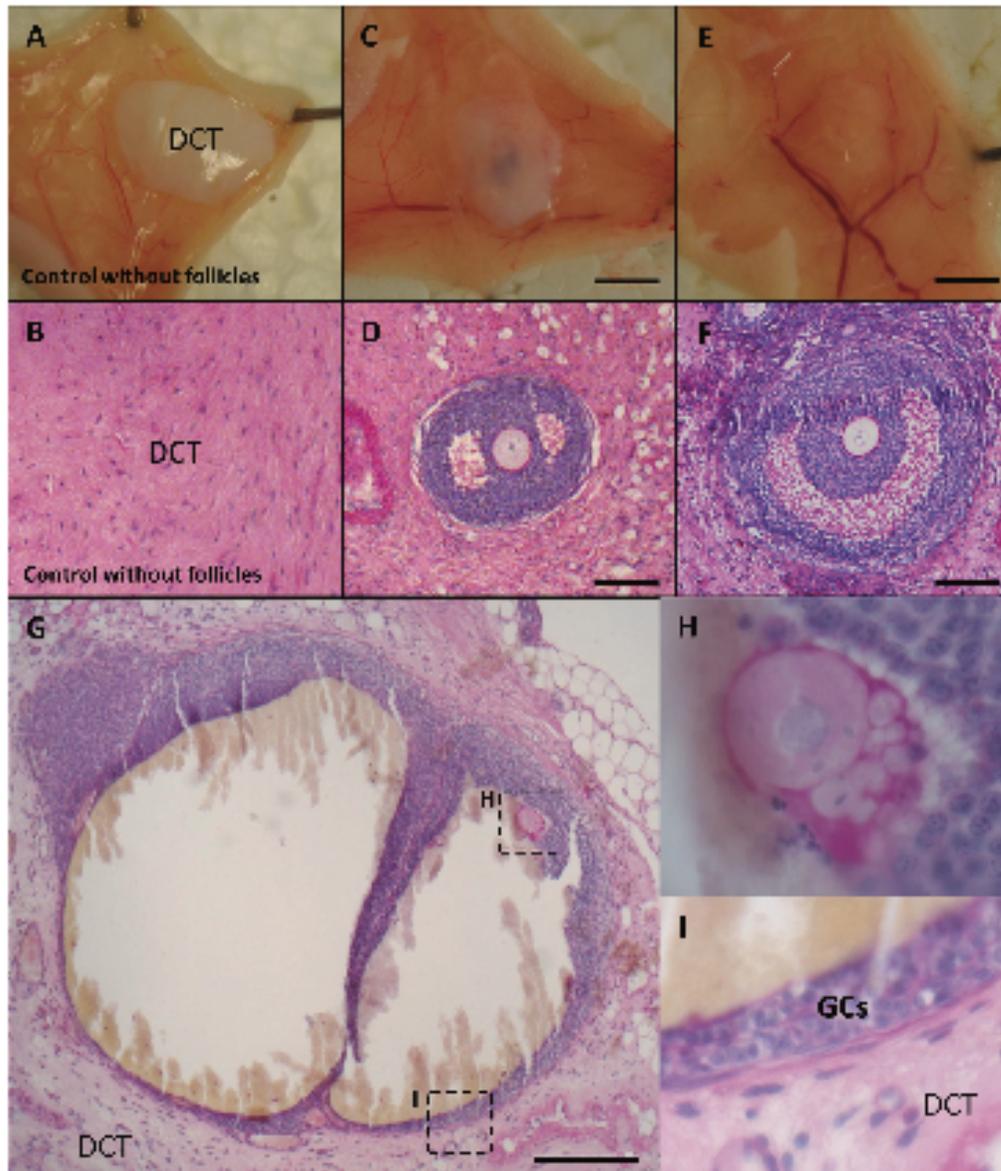


Fig.12 (Liverani L. et al., 2019, Nature).

La proliferazione delle cellule della granulosa dei follicoli ovarici è stata valutata qualitativamente usando Ki67 come marcatore. La positività ad esso ha confermato l'idoneità di entrambi gli scaffold. Sono stati valutati anche i livelli di estrogeno e progesterone. Tali valori, in aumento, hanno confermato la crescita dei follicoli ovarici.



Initial steps in reconstruction of the human ovary: survival of pre-antral stage follicles in a decellularized human ovarian scaffold

