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Fondazione IRCCS Policlinico San Matteo

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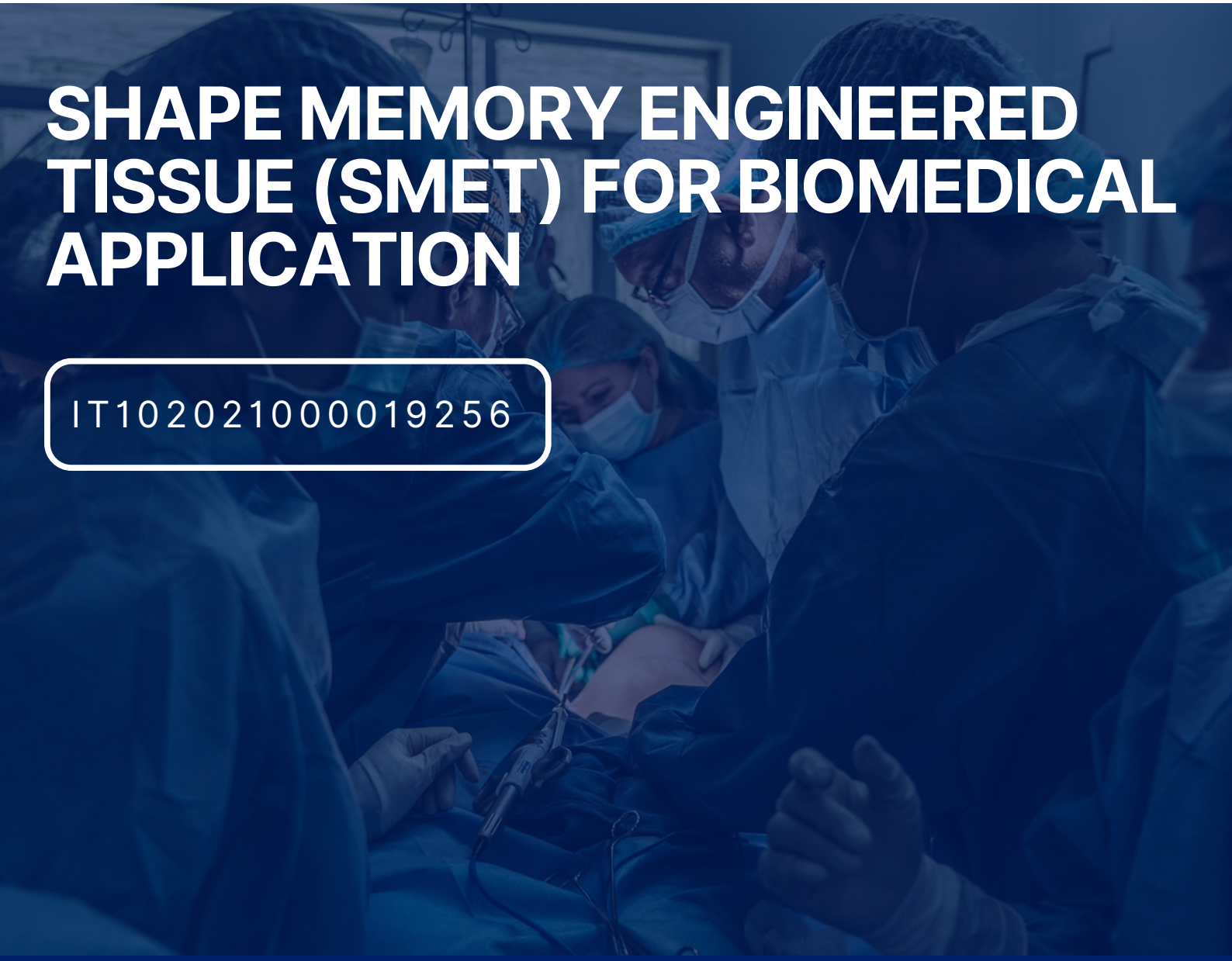

SHAPE MEMORY ENGINEERED TISSUE (SMET) FOR BIOMEDICAL APPLICATION

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Applications:
1) Mini-invasive surgery.
2) Tissue regeneration.
3) Intraocular, intrapleurical, intrauterine and trans-naso-sphenoid surgery.

Key benefits:
1)Reduce invasiveness of traditional surgical techniques using a mini-invasive procedure applicable thanks to the use of low volume replacement tissues.
2)Avoid the onset of chronic inflammation using medical grade biocompatible and biodegradable materials for SMET manufacturing.
3)Prevent tissue rejection through the use of autologous cells.
4)Promote tissue regeneration integrating SMET with desired growth factors or drugs.
5)Integrate cellular and pharmacological therapy.
6)Modulate SMET for a personalize medicine application.
7)Decrease patient recovery time due to reduction of surgical intervention area.
8)Lower health costs.

Offer:
- Licensing out.
- Co-Development.

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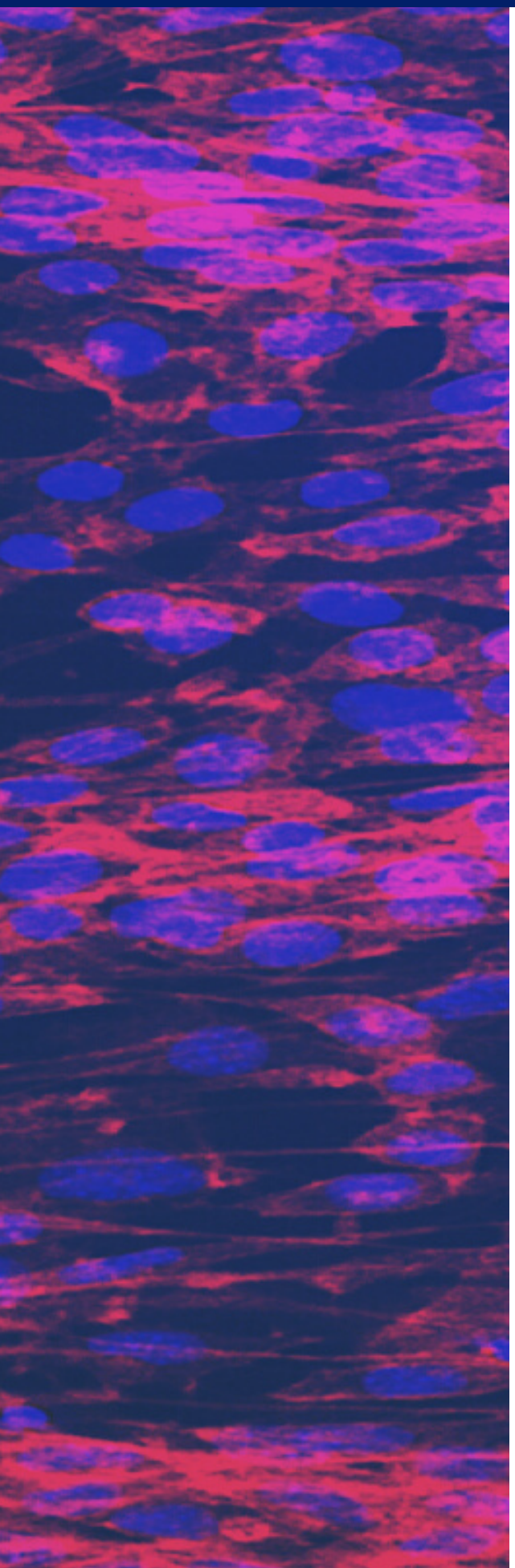

SHAPE MEMORY ENGINEERED TISSUE (SMET) FOR BIOMEDICAL APPLICATION

INVENTION

Shape memory engineered tissue (SMET) able to modify its configuration in response to specific external stimuli and perform local regenerative activity.

BACKGROUND

Many traditional surgical operations (such as esophagectomy, fetoscopy, vascular and abdominal surgery, etc) require invasive procedure that can be dangerous for patient's survival and lengthen recovery times.

Moreover, tissue regeneration sometimes cannot reach physiological activities recovery due to the onset of chronic inflammation, foreign tissue rejection and lack of pro-regenerative stimuli.

A less invasive and more targeted action is required to achieve a better healing.

TECHNOLOGY

The inventors designed a temperature-induced shape memory engineered tissue as mini-invasive device for tissue regeneration. Starting from a flat shape, SMET is rolled up in a stable cylindrical conformation able to hold a smaller volume than the original one. Only upon body implantation, due to the presence of certain physiological stimuli, SMET unrolls and completely regains its flat shape.

A medical grade synthetic copolymer was used to produce SMET using electrospinning fibers fabrication technique.

SMET cellurization has been successfully tested using MSCs and other cell lines and was able to prove the product suitability for selected targets allowing to speed up and promote tissue regrowth.

INVENTORS

Avanzini Maria Antonietta, Benazzo Marco, Conti Bice, Dorati Rossella, Ida Genta Ida, Pisani Silvia.

INTELLECTUAL PROPERTY RIGHTS

Patent pending in Italy.

OFFER

Licensing out & co-development.

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