

# AUDIOMESH

MEMBRANE  
FOR TISSUE  
REGENERATION  
IN ENT



audio<sup>®</sup>  
TECHNOLOGIES

## TRANSFORMATION IN AUTOLOGOUS TISSUE

Guided tissue regeneration occurs by isolating an area without bone from the soft covering tissues.

The connective tissue regrows faster than the bone, occupying the area without bone and preventing bone regeneration.

Audiomesh Biomembrane grants an high mechanical resistance to enable suturing points fixation.

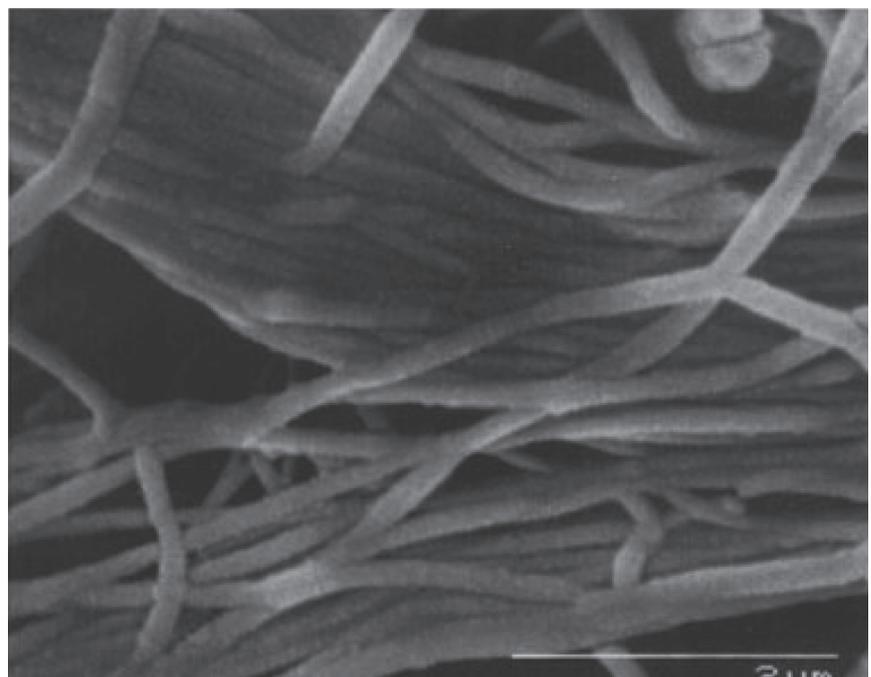
The space bone defect can be filled with biocompatible material and covered by Audiomesh Biomembrane.

Audiomesh Biomembrane is a micro thin network made of natural connective fibers which prevents the cell migration and maintains the barrier

function, without creating necrosis, until it is integrated in the surrounding connective tissues. Audiomesh Biomembrane does not need to be removed, does not give an inflammatory response and it has no toxicity.

**Audiomesh becomes completely replaced by the patients tissue in 2/3 months, then it turns into autologous tissue.**

*SEM image of the elementar collagen fiber made of polypeptides chains. The fiber diameter is 0.2-0.5 microns. The collagen is braided in fiber sheafs.*



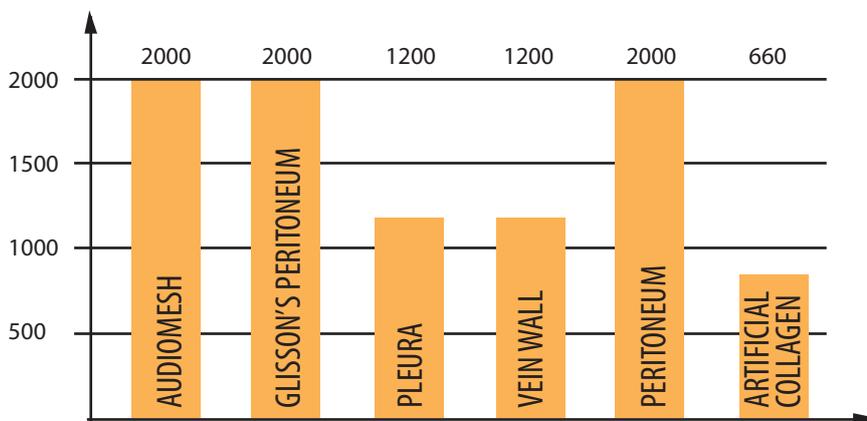
## NATURAL, STRONG AND BIOCOMPATIBLE PRODUCT

Audiomesh is thin and can be adapted to any shape, keeping enough resistance to be sutured to the surrounding tissue.

Audiomesh gets perfectly integrated with patient's tissue and gets reabsorbed without any inflammatory response.

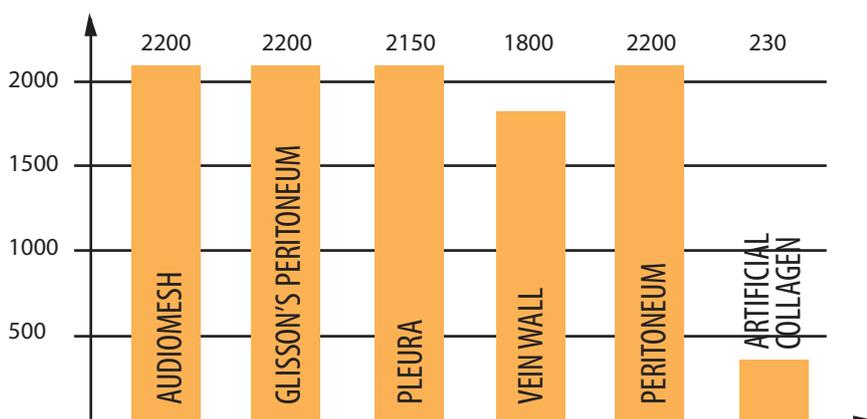
Audiomesh Biomembrane is made of equine pericardium network of collagen fibers. For this reason, the thickness of 0,05 mm offers a mechanical strength higher than other animal biological sheets with which Audiomesh Biomembrane has been compared.

INDEX OF TRACTION RESISTANCE



*Index of traction resistance*

INDEX OF PRESSURE RESISTANCE



*Index of pressure resistance*

*Audiomesh Biomembrane grants the best resistance/thickness ratio between the main connectival tissues derived from animals.*

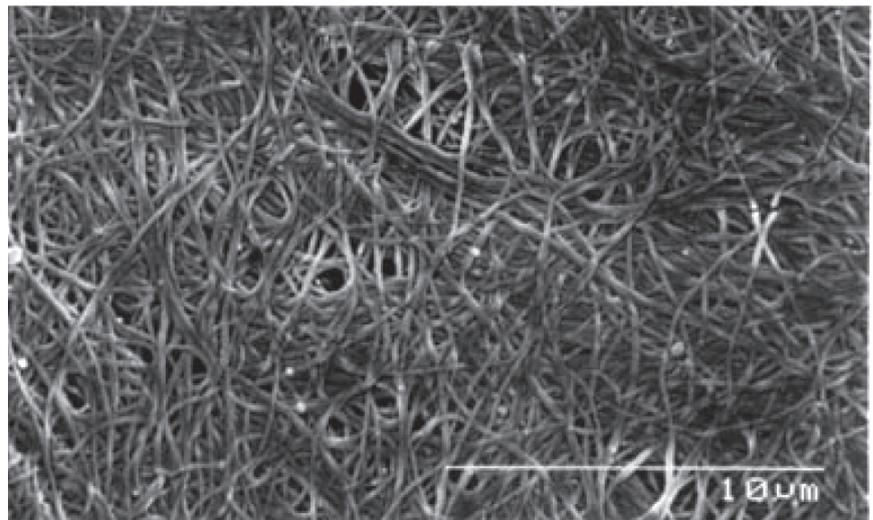
## RESISTANT TO INFECTIONS IN EXPOSED AREAS

The incomparable micro structure made of fibers interwoven in various sizes, achieves a physical resistance. For these properties Audiomesh Biomembrane offers the possibility to replace missing or torn tissues. Audiomesh Biomembrane can be kept exposed for wide

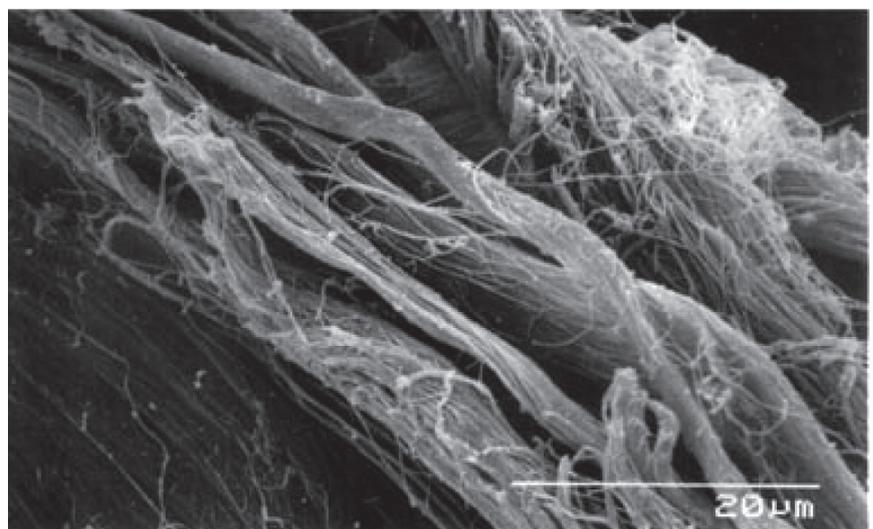
areas which are not covered with tissue, since it does not cause hypertrophy and polypous degeneration of the free flaps as occurs on artificial membranes. Moreover, it acts as a guide for the epithelial tissue new growth. The collagen of Audiomesh Biomembrane

is impermeable to cells and permeable to liquids. Audiomesh Biomembrane has a thickness of 0.05 mm which is much smaller than any artificial membrane. It can be easily placed between tissues and can be cut and/or sutured.

*SEM image of Audiomesh surface made of collagen fibers interwoven.*



*SEM image of Audiomesh thickness made of multiple sheets.*



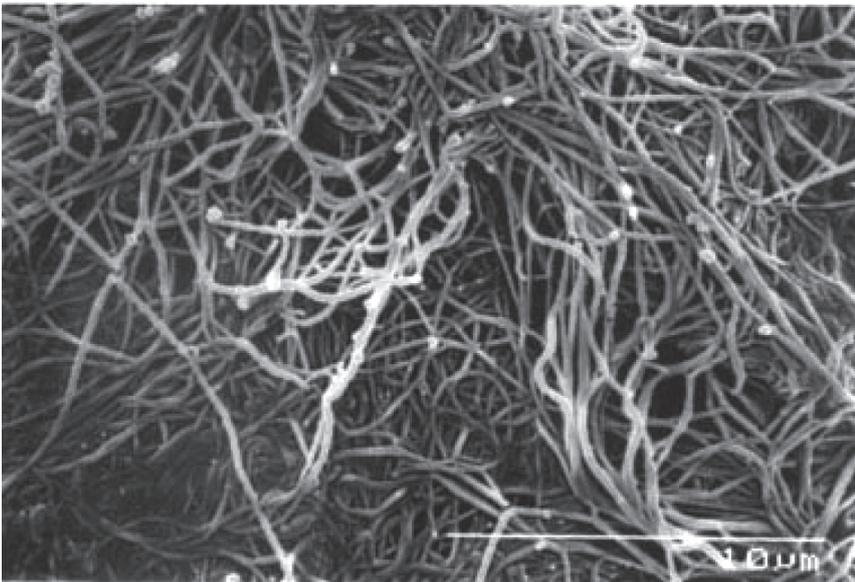
## HIGH ADHESION

### **AUDIOMESH**

Biomembrane grants strong adhesive properties.

### **Audiomesh**

Biomembrane has a translucent surface (mediaspinal side) and an opaque surface (cardiac side).



*SEM image of the opaque surface, which is more adhesive: irregular interweaving of connective fibers.*

## TESTED IN DIFFICULT SITUATIONS

**Audiomesh Biomembrane** is used as tympanic prosthesis in otology, for reconstruction of septum ulcers in rhinology and for guided tissue regeneration of the bony vault. In the first case, both surfaces of the membrane are widely exposed to air since

they are not covered by skin flaps of the auditory canal.

In the second instance, **Audiomesh Biomembrane** cannot be covered by mucous flaps: the exposed areas can reach some cm<sup>2</sup>.

Even in these cases, **Audiomesh Biomembrane** does not produce any necrosis, is resistant to bacterial contamination and acts as guide to the growth of connective and epithelial tissue coming from the covering external flaps.

## AUDIOMESH IN OTOTOLOGY

**Audiomesh Tympanic** can be used as tympanum substitute (Neotympanum).

It's possible to adapt the external auditory canal (EUC) till the osseous anulus, to create a proper slot for the Neotympanum. The Neotympanum should be placed in the EUC till reaching the anulus.

In case the ossicular chain is present, the Neotympanum can be placed in two ways:

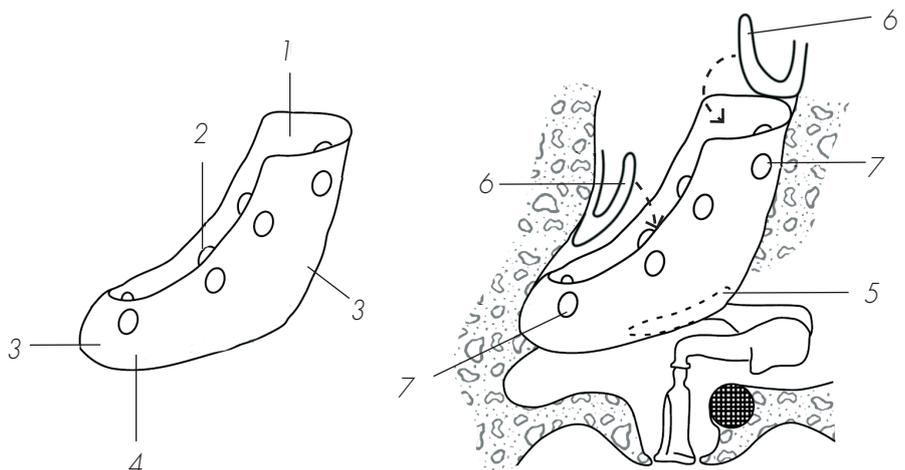
- Placed on the ossicular chain
- Linked with the ossicular chain with the manubrium of the malleus which should pass in a hole made in the Audiomesh. The hole should be previously pierced in a position which will allow the manubrium of the malleus to pass easily.

The second technique require an additional step but grants a long-lasting connection between the Neotympanum and the ossicular chain. Finally the Neotympanum is covered with the remaining flaps of the EUC skin.

The holes on the perimeter of Audiomesh Tympanic allow a direct contact between the EUC skin and the EUC bone, ensuring a quick and strong stabilization of the graft.

CODE	DESCRIPTION	Length	Height	Thickness
<b>Conserved in liquid</b>				
R 20.01H	Nasal Audiomesh	50	30	0,1- 0,2
R 20.02H	Nasal Audiomesh	55	30	0,1- 0,2
R 20.03H	Nasal Audiomesh	60	40	0,1- 0,2
R 20.04H R/L	Audiomesh Tympanic	25	25	0,1- 0,2
R 20.05H R	Septal Audiomesh - small	30	30	0,1- 0,2
20.07H R	Septal Audiomesh - medium	30	40	0,1- 0,2
20.08H	Septal Audiomesh - large	30	60	0,1- 0,2
<b>Freeze-dried</b>				
LYO 20.01H	Nasal Audiomesh	50	30	0,1- 0,2
LYO 20.02H	Nasal Audiomesh	55	30	0,1- 0,2
LYO 20.03H	Nasal Audiomesh	60	40	0,1- 0,2
LYO 20.04H R/L	AudioMesh Tympanic	25	25	0,1- 0,2
LYO 20.05H	Septal Audiomesh - small	30	30	0,1- 0,2
LYO 20.07H	Septal Audiomesh - medium	30	40	0,1- 0,2
LYO 20.08H	Septal Audiomesh - large	30	60	0,1- 0,2

1. AudioMesh®
2. Holes of mm. 2 diameter
3. Part corresponding to external auditory canal
4. Part corresponding to tympanic membrane
5. Site for the hole for insertion of malleus handle - diameter mm. 1
6. Canal skin placed over AudioMesh®
7. Points of contact between skin and bone of external auditory canal



## AUDIOMESH IN RHINOLOGY: R 20.01 Small; R 20.02 Medium; R 20.03 Large

AUDIOMESH is available Lyophilized (dried) or conserved in bacteriostatic liquid. AUDIOMESH Lyophilized is ready to be used: it can be placed dried or hydrated. AUDIOMESH conserved in liquid should be washed 3 times before being placed: it's suggested to use 3 bowls with 100 cc of saline each and wash Audiomesh for 10 minutes in each bowl.

- AUDIOMESH is suitable in closing nasal septum perforations. After creating septal nasal tunnels on the right and on the left side, two Audiomesh membranes (one Left and one Right) have to be fixed under the remaining part of the nasal mucosa. Audiomesh can be cut and tailored if needed.
- AUDIOMESH can be used also as guided bone regeneration membrane. Audiomesh impairs soft tissue growth to penetrate between the nasal bone and maxilla, allowing the bone to heal properly.
- AUDIOMESH can be used to cover the nasal septum bone when the patient shows a very thin skin which doesn't cover enough sharp or irregular osseous-cartilaginous framework of the nasal vault.



*AudioMesh® conserved in liquid dries in about 10 minutes. When placed on a grid it will seem like a tissue paper.*



*AudioMesh® placed along the bony vault. The dried bio-membrane is inserted by two forceps through the intercartilagineous incision.*

# AUDIOMESH

AudioMesh® is a connective sheet derived from equine pericardium.

The sacrificed animals are provided with veterinary certification of eligibility. The pericardium sheet is transported to the laboratory where the most suitable parts for constructions of the membrane are selected.

The selected sheets are treated with proteolytic enzymes and subsequently dipped in solutions which stop the enzymatic action.

The selected sheets are examined under the microscope segment by segment, to identify the areas most suitable for use on the basis of the consistency and resistance of the network collagen structure.

Then they are thinned and punched into different sizes, each designed for a particular use.

**AUDIOMESH® SHOULD NOT BE IMPLANTED IN PATIENTS WITH ALLERGIES TO EQUINE MEAT.**

Manufactured by

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