EverMatrix™ - Permanent Tissue Integrating Technology

The Science

EverMatrix™ biomimetic non-degradable ECM-like structure triggers progressive cellular proliferation, **permanently integrating** itself with surrounding **soft** and **bone** tissue

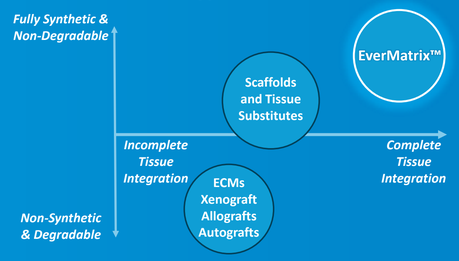
Platform Capabilities

Biomechanical attachment of implants to tissue	*Tissue repair & reinforcement*	*Concealment of implants & sensors*	*Guided Tissue & Bone Regeneration*

Material Properties

Non-degradable	*High tensile strength*	*Flexible and durable*	*High suture pullout force*

A New Type of Biomaterial

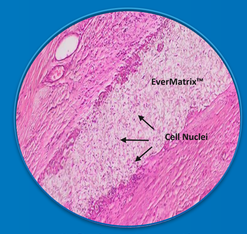


Applications

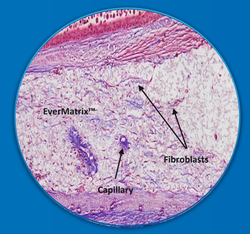
- General Surgery
- Cardiology
- Plastic Surgery
- Orthopedics
- Gynecology
- Periodontology
- Ophthalmology

*In-vivo studies demonstrate full fibroblast colonization and abundant collagen deposition **as well as presence of capillaries within the material** within weeks post implantation **with no encapsulation***

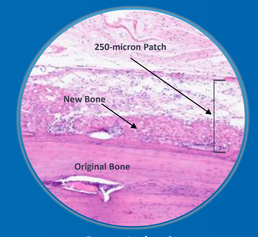
EverMatrix™ Technology Histologic Case Study



Soft Tissue Integration
H&E staining



Soft Tissue Integration
Masson trichrome



Osseo-Induction
Bone growth into device

CorNeat gPatch: Permanent tissue integrating matrix for dental, maxillofacial and gingival reconstructive surgery

Non-degradable tissue-integrating periodontal membrane – A paradigm shift in GBR/GTR surgery
GOAL: Obtain FDA 510(k) clearance for CorNeat gPatch

The Challenge

Current degradable collagen GBR membranes have inconsistent success rates and low mechanical strength. Traditional non-degradable GBR membranes lack integrative capabilities and require removal after healing. Neither type provides lasting tissue support, leading to high rates of peri-implantitis and implant exposure.

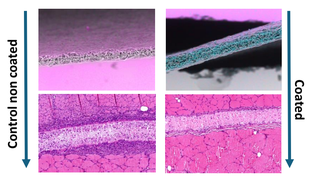
The Solution – EverMatrix™ Membrane

- Permanent integration with surrounding tissue, no need for removal
- Can be drilled through to place implants of various sorts
- Bonded degradable organic hyaluronic acid layer offers acute and medium-term wound healing support, reducing inflammation
- Synthetic layer offers mechanical support; stretchable and flexible, able to treat complex defects and shapes
- Anti-microbial protection
- Provides support to surrounding tissue and treats gingival recession

Interim Results

- Early animal experiments have resulted in early dehiscence and membrane exposure
- R&D for bonding the hyaluronic acid layer to the membrane, addressing early dehiscence and improving biocompatibility, has been completed
- Results: significant reduction of inflammation and encapsulation in a rat animal model (2/6 weeks)

Studies and Product Development supported by the Congressional Military Dental Research Program administered by Naval Medical Research Command Naval Advanced Medical Development (PE 0604771N via MTEC OTA W81XWH-22-9-0023).



Next: Large Animal POC → GLP Animal Study + Biocompatibility → FDA 510(k) Submission

Coating titanium implants – addressing the chronic challenges between maxillofacial implants and surrounding bone/soft tissue

The Challenge

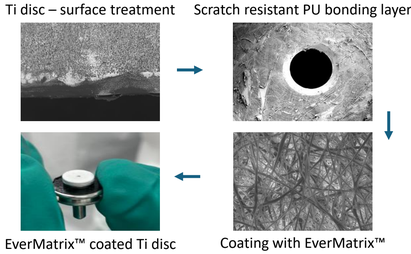
Metallic implants that are commonly used in maxillofacial and orthopedic surgeries do not integrate with surrounding bone and soft tissue. Most undergo surface treatments to increase roughness and porosity for better bone integration. Despite advancements, there is a 3% implant failure rate, with 34% of late implant failures occurring due to peri-implantitis.

The Solution – EverMatrix™ Coated Implant

- Covalent attachment of EverMatrix™ fibers to metal implants facilitates optimal osteointegration and soft tissue integration through mechanical cues
- Flexible coating bridges the gap due to different Young's modulus
- Biofilm-resistant, customized with high-density non-eluting anti-microbial moieties for long-term anti-microbial protection
- Bonding technology provides a coating that withstands drilling
- Coating can be further customized with active and passive ingredients

Interim Results

- Several surface treatments followed by drop casting of PU were developed and evaluated for PU-TI bonding
- EverMatrix™ successfully fabricated by electrospinning on PU coated titanium discs



Next: Mechanical Testing → Animal Study (evaluating bone integration)

CorNeat KPro: A synthetic tissue-integrating artificial cornea

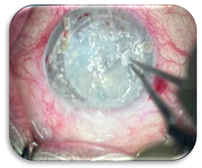
GOAL: Clinical Evaluation and FDA 510(k) clearance

The Challenge

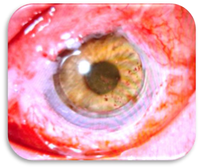
Corneal blindness due to burn trauma, such as explosive blasts or combat injuries, often leads to severe corneal damage, resulting in profound visual impairment or blindness. Traditional treatment by transplantation may be ineffective for extensive corneal damage, making advanced interventions crucial.

Interim Results (Clinical)

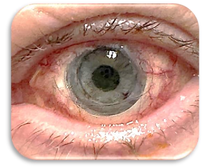
A clinical trial is validating the CorNeat KPro's safety and efficacy at 9 sites in Canada, France, Israel, the Netherlands, and India. The first implantation in Paris (July 2024) restored vision to 6/9 (20/30) in a patient blind for over two decades. No complications have been noted, and we anticipate additional global recruitments as 5 sites are approved and recruiting.



Pre-op



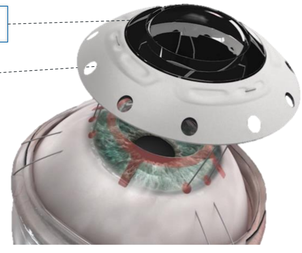
1 Day



1 Month

The Solution – CorNeat KPro Artificial Cornea

Introducing the **CorNeat KPro** – a cutting-edge solution to corneal injuries and pathologies. This device combines a durable PMMA optical lens and a 360-degree EverMatrix™ skirt. Designed for ease of implantation, the CorNeat KPro seamlessly biomechanically integrates with the sclera through a surgically created flap in the conjunctiva, ensuring reliable long-term retention.

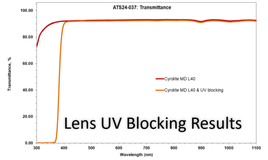


View surgery

CorNeat KPro inserted into the trephined cornea and skirt sandwiched under the conjunctiva

Project Phases (FDA IDE / 510(k) requirements)

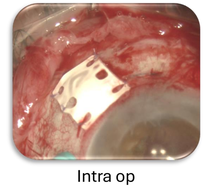
- ✓ Add UV blocking capability to device lens
- ✓ Address excess EtO residuals → plasma sterilization
- ☑ Full V&V and biocompatibility on improved device
- ☑ Clinical evaluation:
  - ☑ 8 OUS patients
  - 15 US patients



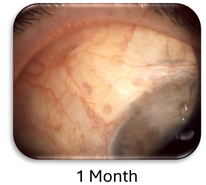
CorNeat EverPatch
Synthetic Non-Degradable Scleral Reinforcement Patch

FDA CLEARED

The CorNeat EverPatch, a component of the CorNeat KPro skirt, is FDA-cleared and has been successfully implanted in hundreds of patients in the US. Designed for scleral reinforcement, it is primarily used in glaucoma shunt implantations to conceal the implanted shunt and prevent tube exposure, a serious complication following shunt procedures.



Intra op



1 Month

For more information, inquiries and joint research opportunities, contact Almog Aley-Raz, CorNeat Vision CEO & VP R&D: almog@corneat.com

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