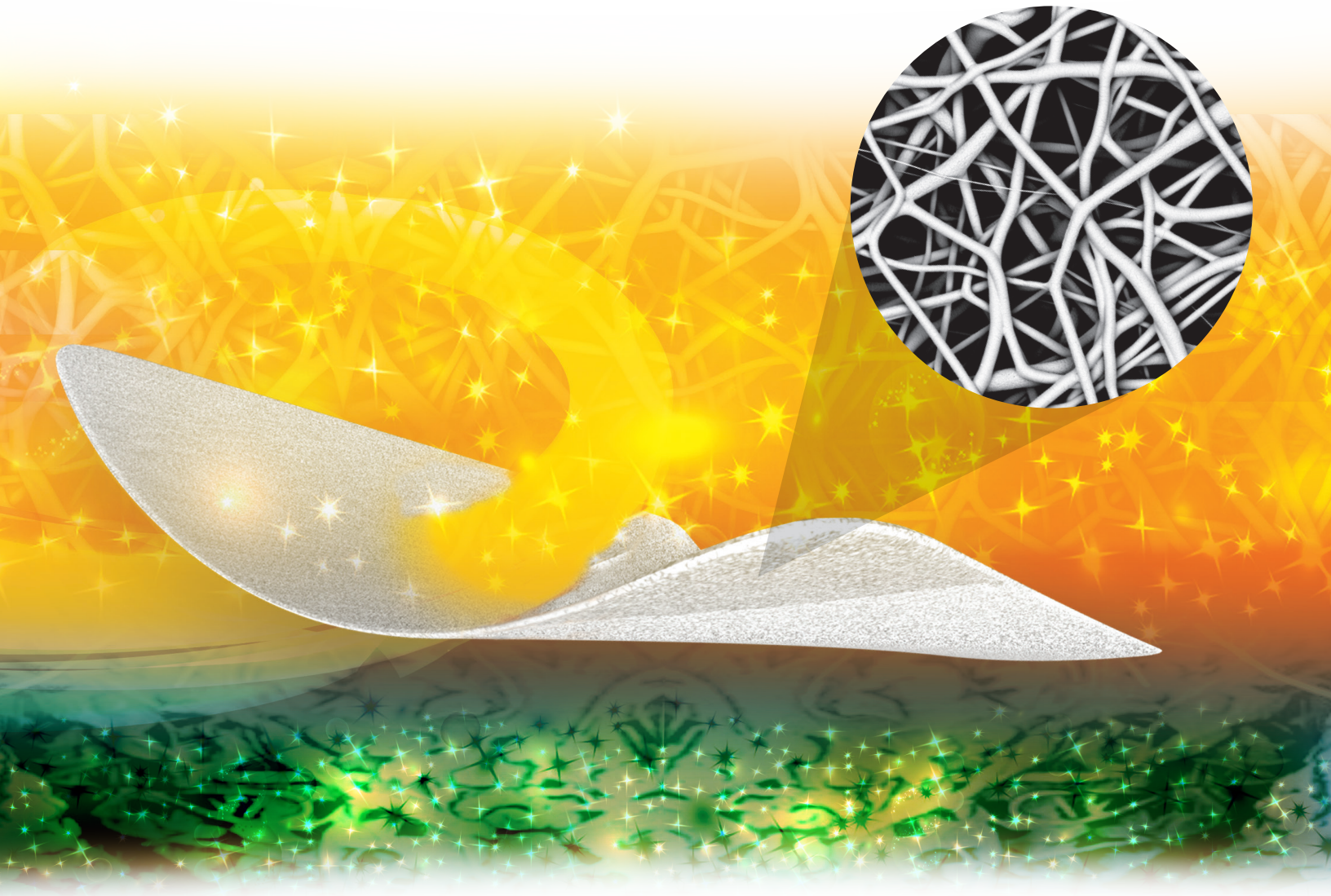
PHOENIX®
WOUND MATRIX

Powered by Electrospun
Synthetic Polymer Technology

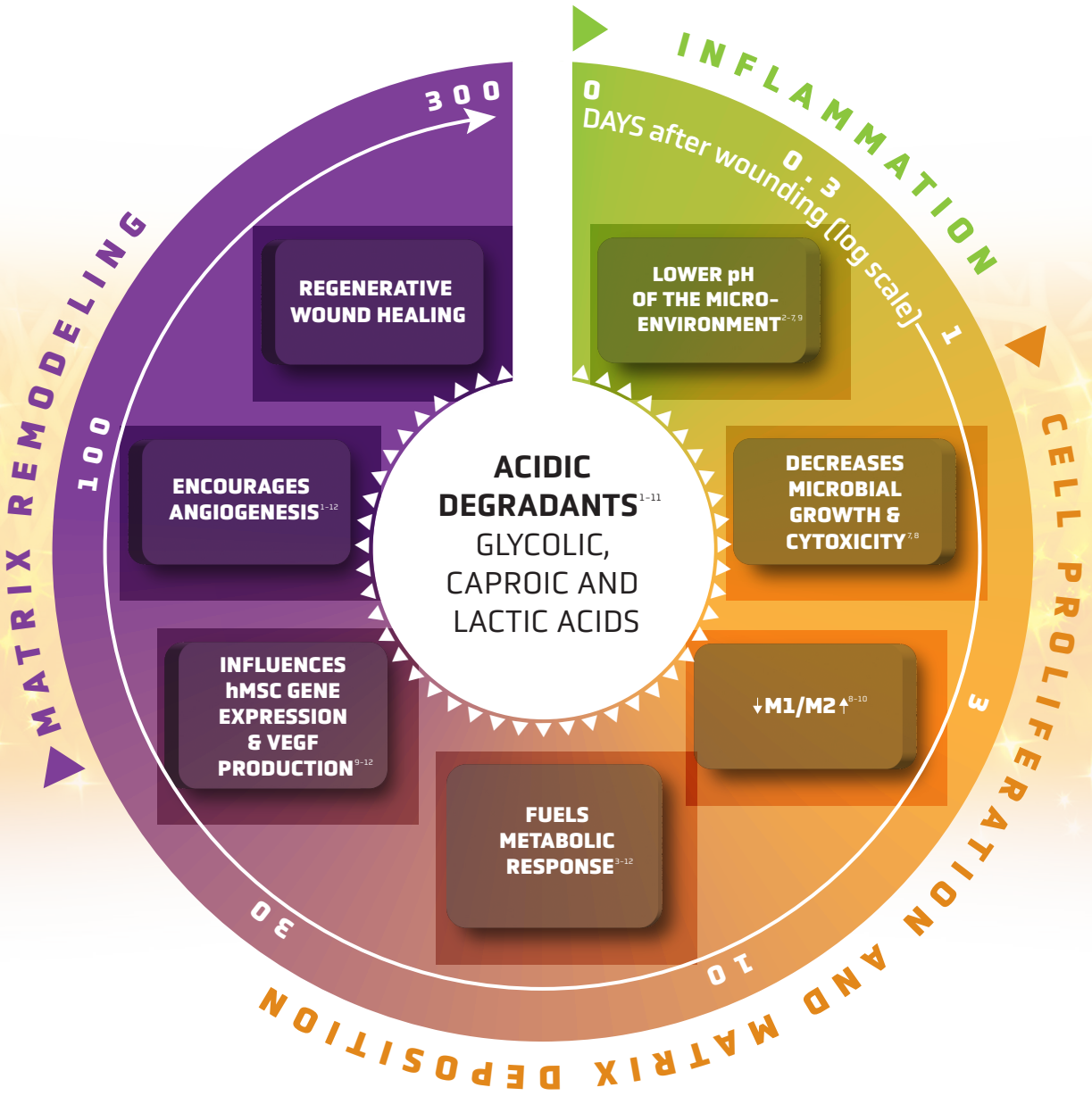
Harness the POWER of the inflammatory response to accelerate regenerative wound healing



RENOVODERM

INNOVATION REDEFINED

The body is made to heal. However, the complex nature of the wound microenvironment can disrupt the body's natural wound healing process.



PHOENIX WOUND MATRIX® is an electrospun synthetic polymer matrix designed to provide a microporous scaffold to *ACCELERATE* regenerative wound healing.

PHOENIX contributes a sustained release of glycolic, caproic and lactic acids to the microenvironment, which fuels a metabolic response to accelerate wound healing outcomes.

Acute tissue – protect and accelerate regenerative wound healing.

Chronic tissue – restore and accelerate regenerative wound healing.

In the US, **8 million Americans live with complex, non-healing wounds costing the healthcare system upwards of $25B** annually[13, 14]. Based on USWR and RCT data it is likely that in the real world, among complicated patients, **healing rates better than 40.0% within 12 weeks are not achievable**[15].

Behind these numbers are real people with real stories in the fight to heal more wounds. Patients with chronic wounds suffer wound associated pain and diminished quality of life—some losing hope they'll ever heal. Surgeons, doctors and wound care specialists carry heavy burdens to improve their outcomes.

DOCTORS AND PATIENTS ARE INSPIRED BY THE RESULTS.

"I was so happy to see my wound getting smaller week after week with PHOENIX. It gave me hope that I would heal and not need another amputation."

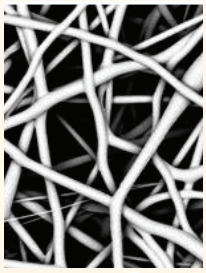
—Felix, diabetic foot ulcer patient

5 ways PHOENIX Wound Matrix is redefining the status quo in regenerative wound healing

1 3D electrospun synthetic polymer matrix bioengineered to mimic native ECM

- Non-woven, microporous scaffold stimulates cellular infiltration and proliferation
- Design construct and acidic monomers increase graft success rates
- 510K cleared for partial and full thickness acute wounds, chronic wounds and burns
- PHOENIX Wound Matrix **naturally resorbs via** hydrolysis within 7–14 days demonstrating **TWO OR FEWER** applications to closure[16]

Native Dermal ECM

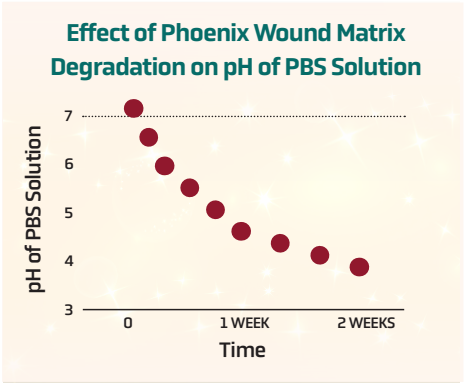


PHOENIX Wound Matrix

PHOENIX cellular adhesion, infiltration & proliferation

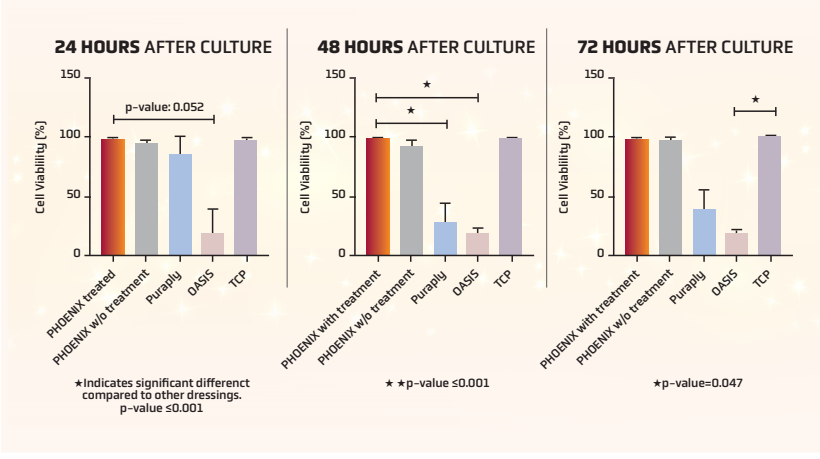
2 Monomers harness an innate inflammatory response to accelerate wound healing

- Synthetic polymers naturally resorb and contribute glycolic, lactic and caproic acids, known to support wound healing[2-12]
- Allows for increased oxygen perfusion[2-9]
- Decreases protease and microbial imbalance within the microenvironment[2-9]
- PHOENIX Wound Matrix **demonstrates a reduction in pH from 7.4 to 5.9 within 78 hours, to 4 within 2 weeks**[17]



3 Lactate fuels a metabolic response for tissue repair[8]

- Lactate influences the gene expression of hMSC and VEGFs[12]
- Primes MSCs for wound healing[11]
- Promotes angiogenesis[1-12]
- **PHOENIX Wound Matrix demonstrates a significant increase of cell proliferation over 24 hours of culture**[17]



4 Demonstrates an acceleration in regenerative wound healing of acute & chronic wounds [16]

IN REAL-WORLD EVALUATION ON 50 WOUNDS★

The efficacy of a novel 3D electrospun synthetic polymer matrix (3DESPM) on the management of difficult-to-heal wounds[16]

100%
Improved tissue appearance and reduced inflammation after 1st application

67.6%
Median PAR at **4 weeks**

80%
Median PAR at **4 weeks**

~8 WEEKS
Median time to wound closure

2★
Median number of applications

COMPLEX SURGICAL WOUNDS – **avg. 65 days to heal, 1.5 applications**

CHRONIC DIABETIC FOOT ULCER – **avg. 42 days to heal, 3 applications**

CHRONIC PRESSURE ULCER – **avg. 77 days to heal, 2.5 applications**

VASCULAR LEG ULCER – **avg. 30 days to heal, 2 applications**

★ Complex patients with average 4.4 comorbidities and difficult-to-heal wounds with mean baseline area of 10.2 cm^2
★★ vs. 12 weeks with CTP-only treatments

"PHOENIX Wound Matrix offers an innovative, multi-dimensional solution that is helping to accelerate the rate to closure of durable tissue."

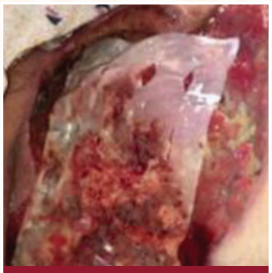
– Matthew Garoufalis, DPM, FASPS, FACFAOM, CWS, FFPM RCPS (Glasg)

5 Improve outcomes and decrease cost as compared to CTPs

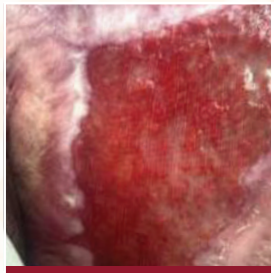
- Accelerates regenerative wound healing
- Improves the tissue viability and graft success rates
- Fully resorbs within 7-14 days
- On average **TWO OR FEWER** applications for closure
- Less costly than other advanced modalities per cm^2
- 510K cleared medical device, with two-year shelf life
- Easy to handle and apply

COMPLEX SURGICAL RECONSTRUCTION – OR

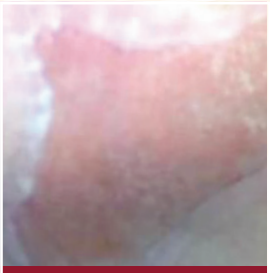
LOWER LEFT EXTRAMITY MASS[18]



Day 1
PHOENIX applied



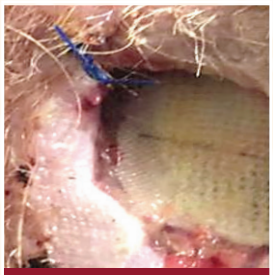
Week 3.5
70% closure



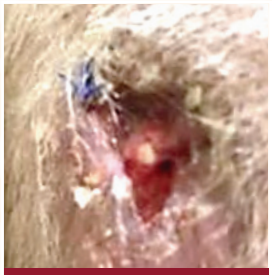
Week 4
Wound closure

100%
Closure within
4 weeks

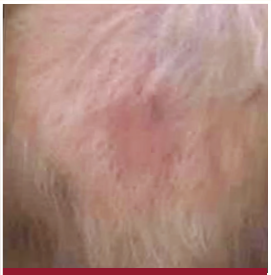
COMPLETE FULL-THICKNESS HEAD WOUND[18]



Day 1
PHOENIX applied



Week 2
70% closure

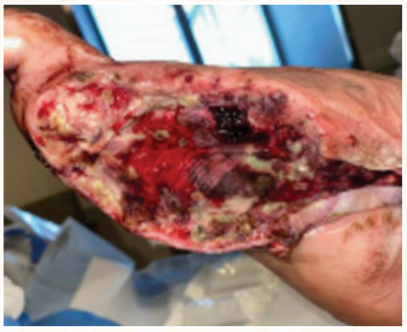


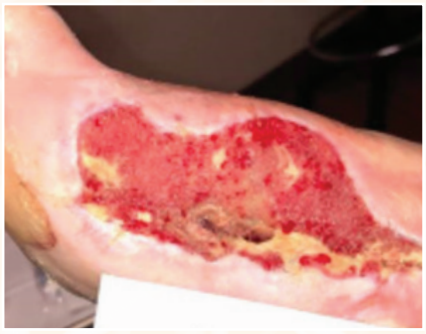
Week 3
Patient transitioned to clinic

100%
Closure within
3 weeks

CHRONIC WOUND OUTCOMES

COMPLEX LIMB SALVAGE[18]

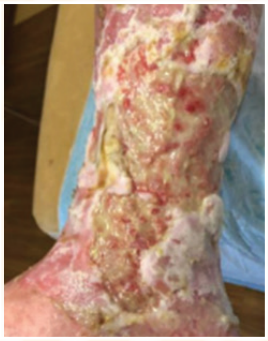


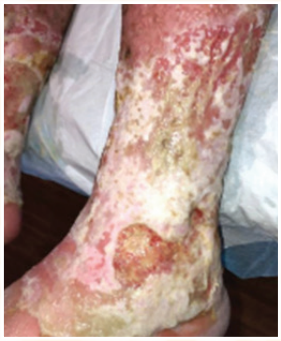


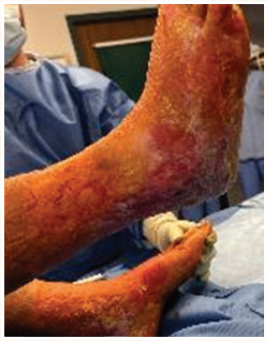
Wound healing within
4.5
WEEKS

COMPLEX LOWER EXTREMITY VENOUS ULCERS[15]

1 year in duration







Wound healing within
4.5
MONTHS

Visit **www.renovoderm.tech** for full case details and outcomes.

PHOENIX® WOUND MATRIX

Powered by Electrospun Synthetic Polymer Technology

- **Microporous synthetic polymer scaffold for regenerative wound healing**
- **Fully resorbs within 7–14 days**
- **Sustained release of glycolic, caproic and lactic acids**
- **Encourages a healthy microenvironment**
- **Acceleration of stalled wound healing confirmed**[16]
- **On average <8 weeks to closure**
- **2 or fewer applications**

FREQUENTLY ASKED QUESTIONS

What is PHOENIX Wound Matrix?

PHOENIX Wound Matrix is a bioengineered, electrospun synthetic polymer matrix used as a resorbable synthetic graft for the management of partial to full thickness wounds. **PHOENIX is a 510K cleared medical device**.

How does PHOENIX Wound Matrix differ from CTPs?

PHOENIX Wound Matrix is bioengineered utilizing two resorbable synthetic polymers—polyglycolic acid (PGA) and poly lactide co-caprolactone (PLCL). Through our patented manufacturing process, PHOENIX provides a non-woven, microporous scaffold.

Stimulus for cellular migration, infiltration and proliferation. Via hydrolysis, PHOENIX naturally resorbs contributing glycolic, lactic and caproic acids to the wound microenvironment to correct, restore and accelerate the body's natural wound healing process.

What types of wounds is PHOENIX Wound Matrix indicated for?

PHOENIX Wound Matrix is indicated for the management of partial and full-thickness acute & chronic wounds, and burns.

What impact does PHOENIX Wound Matrix have on pH?

PHOENIX Wound Matrix demonstrated a drop in pH from **7.4** to **5.9** within 78 hours, to **4.0** within two weeks. In vitro degradation test in isotonic PBS solution.

How is PHOENIX Wound Matrix applied?

PHOENIX Wound Matrix should be applied within the confines of the wound after thorough debridement. PHOENIX should be affixed using steri-strips or surgical glue, covered with a non-adherent, and bolstered in place.

What is the total time for degradation of PHOENIX Wound Matrix?

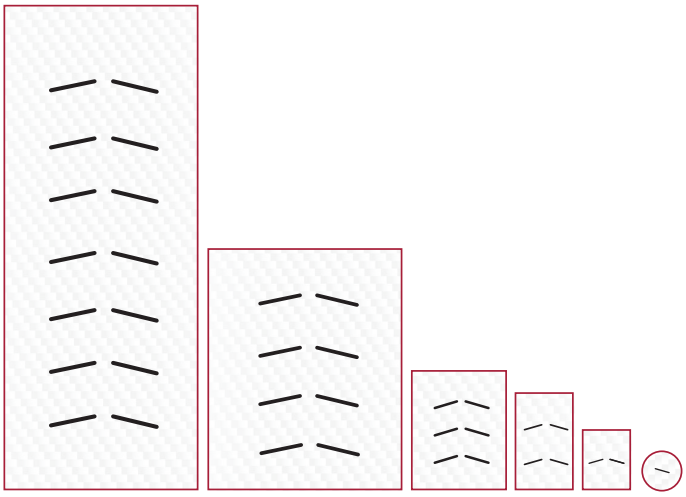
The total time for degradation is **7 – 14** days. PHOENIX Wound Matrix can be applied weekly or at the discretion of the physician.

Is PHOENIX Wound Matrix reimbursed?

PHOENIX Wound Matrix is reimbursed using HCPCs **A2015**, resorbable synthetic graft/cm^2. Please see our reimbursement guide for more information.

SIZING AND REIMBURSEMENT

HCPCS A2015 – PHOENIX Wound Matrix skin substitute, synthetic, resorbable, per cm^2



PHOENIX®
WOUND MATRIX
Powered by Electrospun Synthetic Polymer Technology

Size	cm^2	PHOENIX™ Wound Matrix *Fenestrated* Part #	OR Surgical PHOENIX™ Wound Matrix *Fenestrated* Part #
10 cm x 20 cm	200	FG-0021	FG-0051
10 cm x 10 cm	100	FG-0022	FG-0052
5 cm x 5 cm	25	FG-0023	
3 cm x 4 cm	12	FG-0024	
2.5 cm x 2.5 cm	6	FG-0025	
16 mm disc	1.6	FG-0026	

1. Dickson, L, Gerecht, S, Engineered Biopolymeric Scaffolds for Chronic Wound Healing, Front. Physiol., 2016, Sec. Clinical and Translational Physiology, https://doi.org/10.3389/fphys.2016.00341; 2. Kaufman T, Eichenlaub EH, Angel MF, Levin M, Futrell JW (1985) Topical acidification promotes healing of experimental deep partial thickness skin burns: a randomised double-blind preliminary study. Burns 12: 84–90.; 3. Leveen H, Falk G, Borek B, Diaz C, Lynfield Y, Wynkoop B, Mabunda GA et al (1973) Chemical acidification of wounds. An adjuvant to healing and the unfavourable action of alkalinity and ammonia. Ann Surgery 178(6): 745–50.; 4. Jones, E.M., C.A. Cochrane, and S.L. Percival, The Effect of pH on the Extracellular Matrix and Biofilms. Adv Wound Care (New Rochelle), 2015. 4(7): p. 431-439.; 5. Schneider, L.A., et al., Influence of pH on wound-healing: a new perspective for wound-therapy? Arch Dermatol Res, 2007. 298(9): p. 413-20.; 6. Gethin, G., The significance of surface pH in chronic wounds. Wounds UK, 2007 ; 7. B, G., et al., Proteases and pH in chronic wounds. Journal of Wound Care, 2005. 14(2): p. 59-61.; 8. Das A, Sinha M, Datta S, Abas M, Chaffee S, Sen CK, Roy S. Monocyte and macrophage plasticity in tissue repair and regeneration. Am J Pathol. 2015 Oct;185(10):2596-606. doi: 10.1016/j.ajpath.2015.06.001. Epub 2015 Jun 26. PMID: 26118749; PMCID: PMC4607753.; 9. Haller HL, Sander F, Popp D, Rapp M, Hartmann B, Demircan M, Nischwitz SP, Kamolz LP. Oxygen, pH, Lactate, and Metabolism-How Old Knowledge and New Insights Might Be Combined for New Wound Treatment. Medicina (Kaunas). 2021 Nov 1;57(11):1190. doi: 10.3390/medicina57111190. PMID: 34833408; PMCID: PMC8617754.; 10. Kroner, E.; Kaiser, J.S.; Fischer, S.C.; Arzt, E. Bioinspired polymeric surface patterns for medical applications. J. Appl. Biomater. Funct. Mater. 2012, 10, 287–292.; 11. Zieker D, Schäfer R, Glatzle J, Nieselt K, Coerper S, Kluba T, Northoff H, Königsrainer A, Hunt TK, Beckert S. Lactate modulates gene expression in human mesenchymal stem cells. Langenbecks Arch Surg. 2008 May;393(3):297-301. doi: 10.1007/s00423-008-0286-6. Epub 2008 Feb 14. Erratum in: Langenbecks Arch Surg. 2009 Mar;394(2):405. Kluba, Torsten [added]. PMID: 18273635.; 12. Schneider CC, Ateschrang A, Königsrainer I, Glatzle J, Bühler S, Schaefer R, Northoff H, Königsrainer A, Zieker D. Lactate influences the gene expression profile of human mesenchymal stem cells (hMSC) in a dose dependant manner. Cell Physiol Biochem. 2012;30(6):1547-56. doi: 10.1159/000343342. Epub 2012 Dec 10. PMID: 23234875.; 13. Lim, H. W., S.A.B Collins, J.S. Resneck, Jr, et al. 2017. The burden of skin disease in the United States. J. Am. Acad. Dermatol. 76: 958-972.e2.; 14. Driver, V.R., R.J. Snyder, T. Conner-Kerr & T. Thomas. 2014. AAWC Fact Sheet 1: CHRONIC WOUNDS The most important health problem you've never heard about. AAWC. Accessed January 24, 2018.; 15. Caroline E. Fife, Kristen A. Eckert, and Marissa J. Carter. Publicly Reported Wound Healing Rates: The Fantasy and the Reality. Advances in Wound Care. Mar 2018.77-94.http://doi.org/10.1089/wound.2017.0743; 16. Lambert, C. Jake, Aviles, F., et al., The efficacy of a novel 3-D electrospun synthetic polymer matrix (3DESPM) for the management of difficult-to-heal wounds, Symposium on Advanced Wound Care poster presentation, 5.2022; 17.In house data (pH chart, cell viability chart); 18. In house clinical compendium data

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