ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

FORWARD LOOKING STATEMENT

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, the market opportunities for and the market acceptance of our products, expectations for products in development, the potential uses for our products, expected outcomes for clinical studies, expected growth in revenue and market share, sustainability of performance, the availability of third-party reimbursement for our products, potential acquisitions, the strength of our patent portfolio, the effectiveness of our risk management and compliance policies, and our expectations for CollaFix™. These statements are based on current information and belief, and are not guarantees of future performance. Our ability to predict results, financial or otherwise, or the actual effect of future plans or strategies is inherently uncertain and actual results may differ from those predicted depending on a variety of factors. Among the risks and uncertainties that could cause actual results to differ materially from those indicated by such forward-looking statements include that our products may not gain the anticipated acceptance in the marketplace or that acceptance may be delayed; the effects of competition; our performance to date may not be sustainable at the same levels; we may not be able to protect our intellectual property and proprietary technology through patents and other means or may be subject to claims that our intellectual property or technology infringes the rights of third parties; our compliance and risk management policies may not be as effective as believed or may not be consistently applied to achieve effectiveness, we may not be able to commercialize CollaFix™ or other products in development as expected; there may be delays or changes in reimbursement for our products; there may be delays in clinical trials or unexpected results; there may be other regulatory changes further impacting our products in the US or other countries; we may not successfully complete the Biologics License Application process for specific micronized products within certain timeframes, at the estimated costs associated with that process, or may not complete the process at all, we may not be able to execute on acquisitions as desired, and the risk factors detailed from time to time in the Company's periodic Securities and Exchange Commission filings, including, without limitation, its 10-K filing for the 2014 fiscal year, and its most recent 10Q. By making these forward-looking statements, MiMedx Group, Inc. does not undertake to update those in any manner except as may be required by the Company's disclosure obligations in filings it makes with the Securities and Exchange Commission under the federal securities laws.

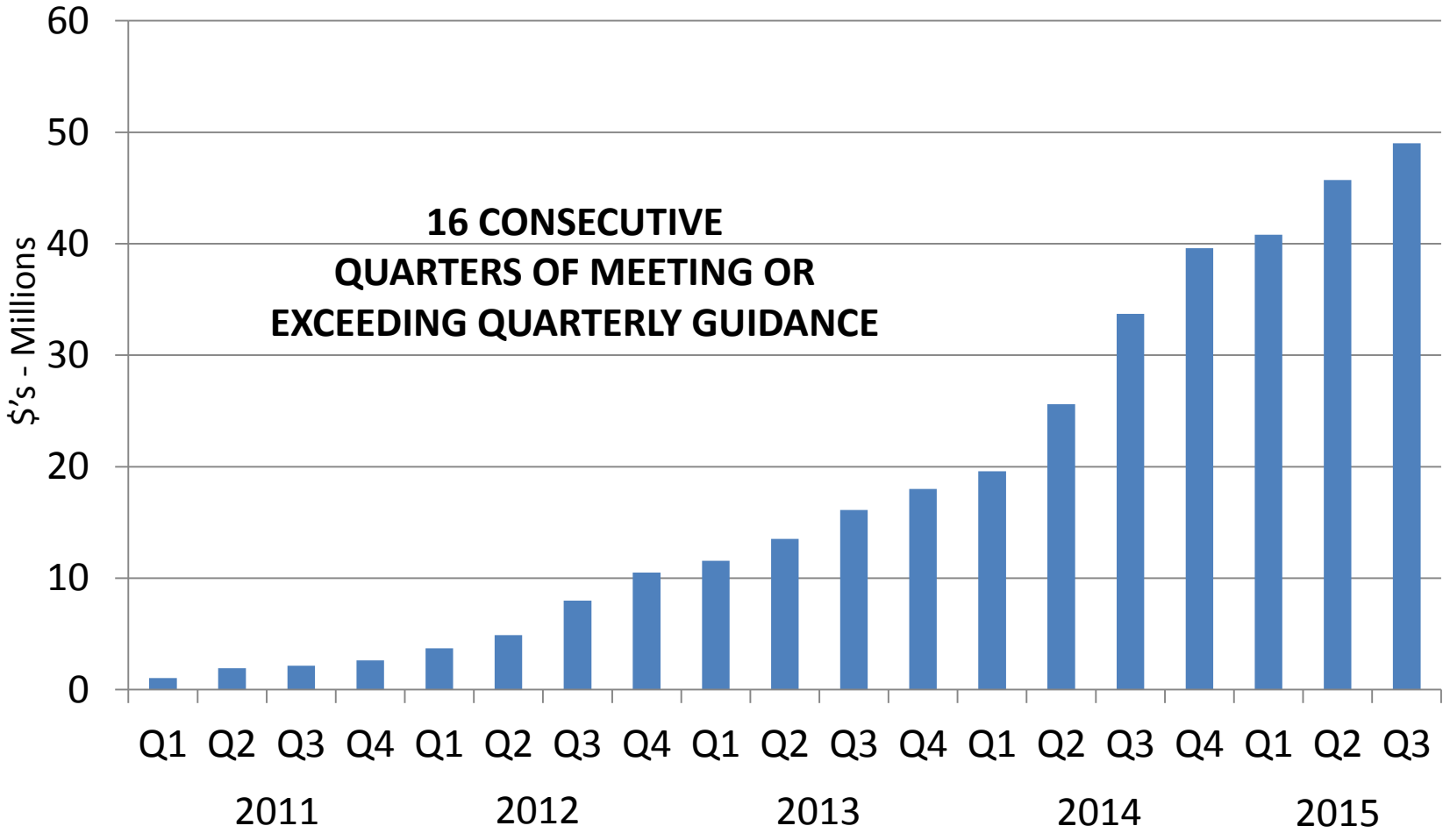
MiMedx

MiMedx Introduction

Parker H. “Pete” Petit

Chairman & CEO

CONSISTENT SUSTAINABLE GROWTH



MiMedx

EXECUTIVE MANAGEMENT

Parker H. “Pete” Petit	Chairman & Chief Executive Officer
Bill Taylor	President & Chief Operating Officer
Michael J. Senken	Chief Financial Officer
Christopher M. Cashman	Executive VP & Chief Commercialization Officer
Brent D. Miller	Executive VP
Deborah L. Dean	Executive VP
Thomas J. Koob Ph.D.	Chief Scientific Officer
Donald E. Fetterolf, MD, FACP	Chief Medical Officer
David H. Mason, Jr., MD	VP, Medical Affairs for Clinical Practice
Frank Burrows	VP, Clinical & Scientific Liaison
Randall Spencer	VP, Clinical Innovation
Rebeccah J. C. Brown, Ph.D.	VP, Product Development, Regulatory Affairs, QA
Conan Young, Ph.D.	Director of Research

MiMedx

INVESTMENT HIGHLIGHTS

- Regenerative Medicine Technology
- Three Platform Technologies
- Strong I.P. portfolio
  - 25 Amniotic allograft patents issued and allowed, over 100 pending
  - Over 200 patents issued & pending for all technologies
- Four Years of Meeting or Exceeding Revenue Guidance with High Revenue Growth
- High Gross Profit Margins with Excellent Financial Leverage
- Experienced and Effective Management with a 5 Year Strategic Plan
- Direct and Experienced Sales Organization in Wound Care
- Building a Professional Surgical Specialty Sales Organization
- Private Label Agreements with Medtronic and Zimmer
- Strong Balance Sheet and Increasing Positive Cash Flow

Strategic Overview

Bill Taylor

President & COO

MISSION AND TECHNOLOGY

MiMedx is a Regenerative Medicine Company Delivering Innovative Technologies that Enable Healing

Amniotic Tissue

Enhance Healing
Reduce Scar Tissue
Reduce Inflammation
Immunologically Privileged

Proven Clinical Results
Logistically Superior
5 year Shelf Life
Stored at Ambient Conditions

Amniotic Fluid

Protect & Cushion
Provide Lubrication
Reduce Inflammation

Collagen Fiber

Mimics Native Tissue Biomechanics for Tendon, Ligament Repair

EpiFix®
AmnioFix®
Purion® process
OrthoFlo™
Colla Fix™

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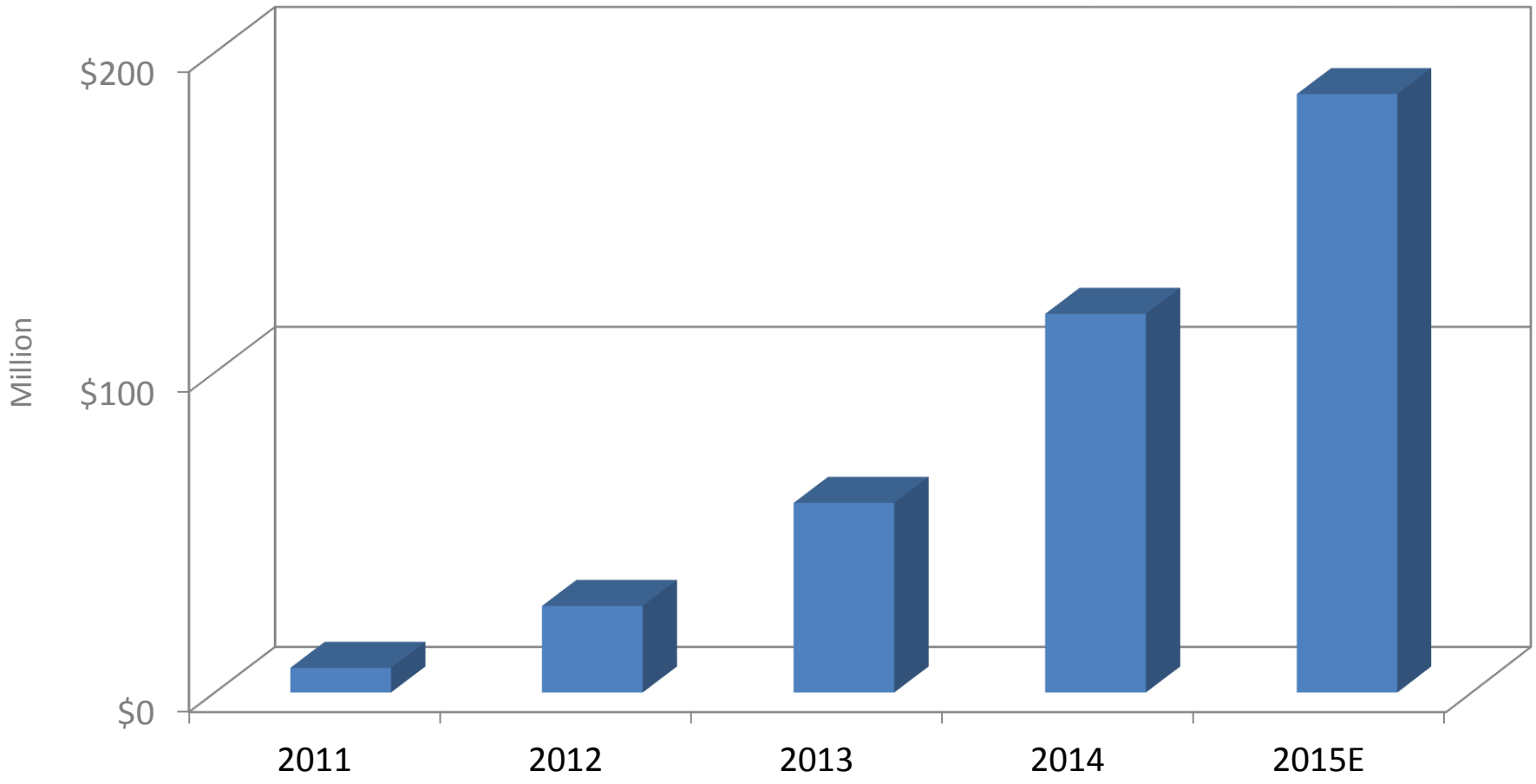
GROWTH STORY CONTINUES



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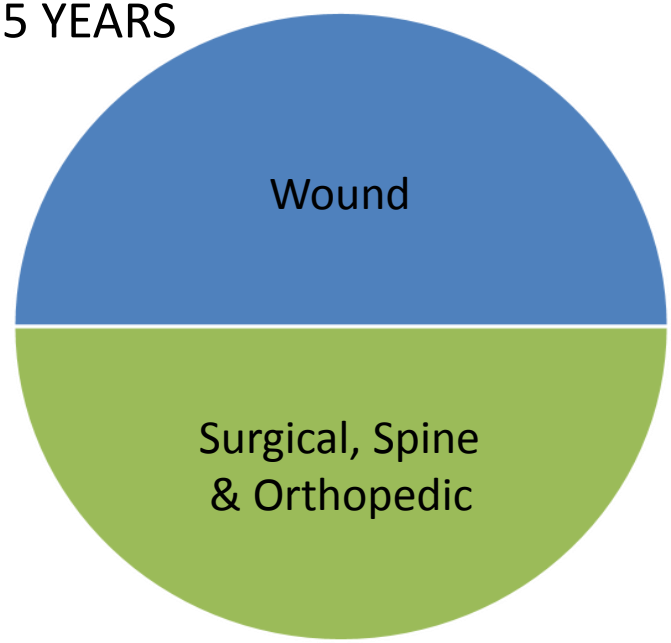
GROWTH STORY CONTINUES

SURGICAL EXPECTED TO GROW AS LARGE AS WOUND WITHIN 5 YEARS



Projected Mix in 2019 - 2020

GROWTH DRIVERS

- Market Share Gains
- Market Expansion
- Incremental Reimbursement Coverage
- International Expansion
- Product/Platform Development
- Acquisitions (if synergistic & accretive)

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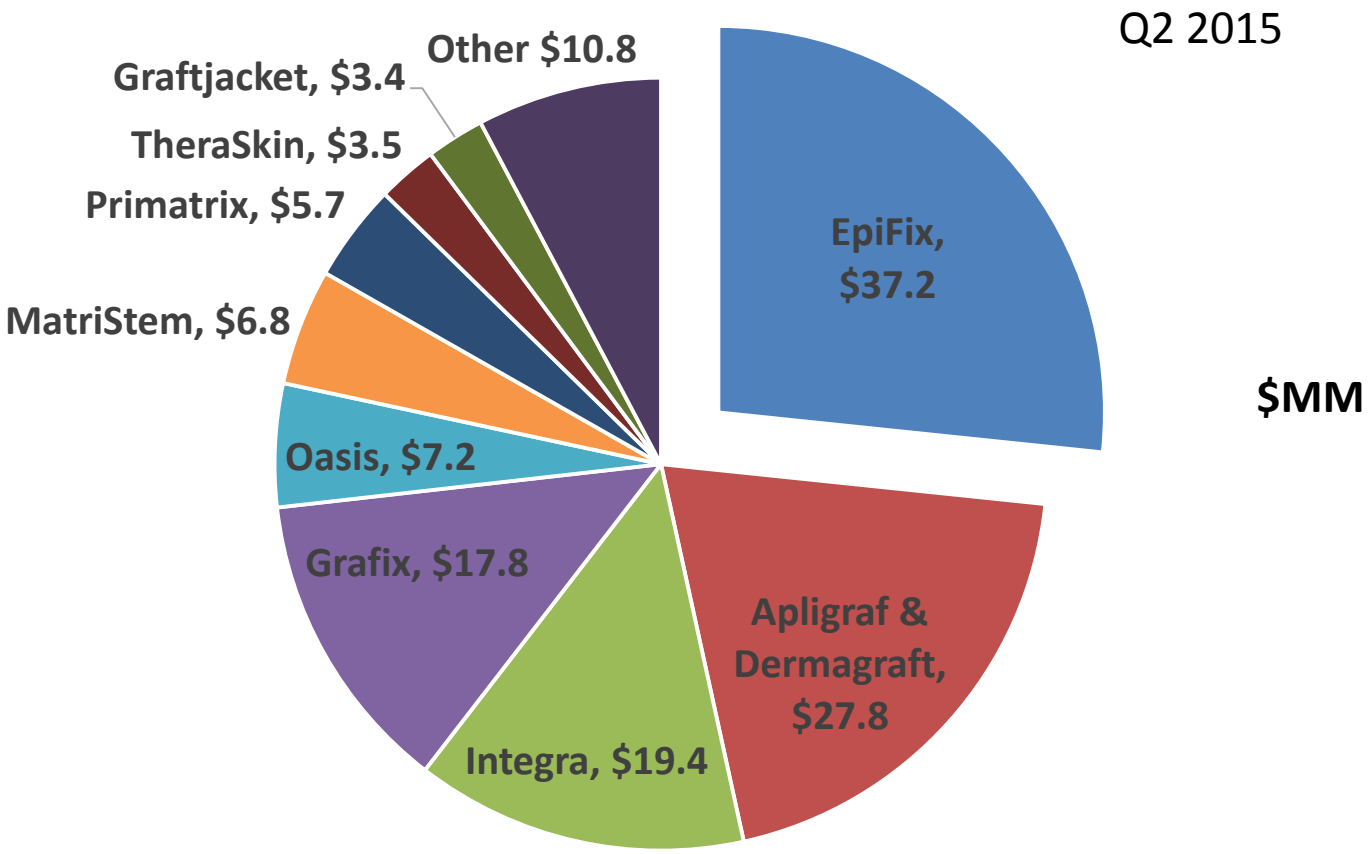
MARKET SHARE GAINS & EXPANSION



Source: SmartTRAK

INCREMENTAL REIMBURSEMENT OPPORTUNITY

Commercial plans yet to cover EpiFix:

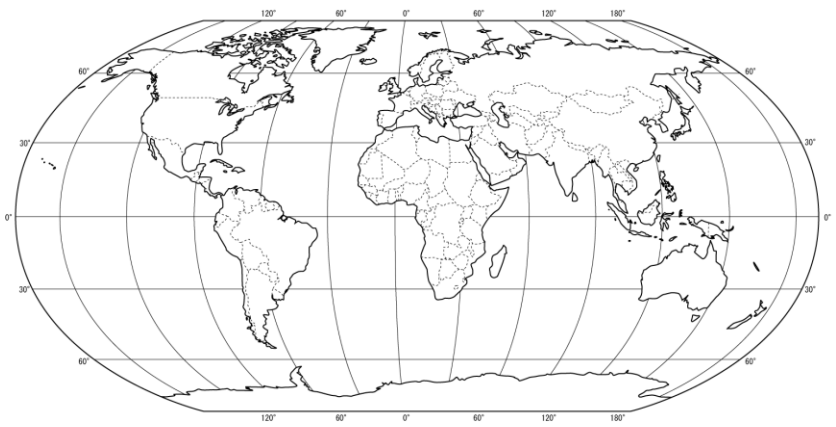
- United
- Aetna
- Humana
- Small Others

Representing over **70 million** lives…

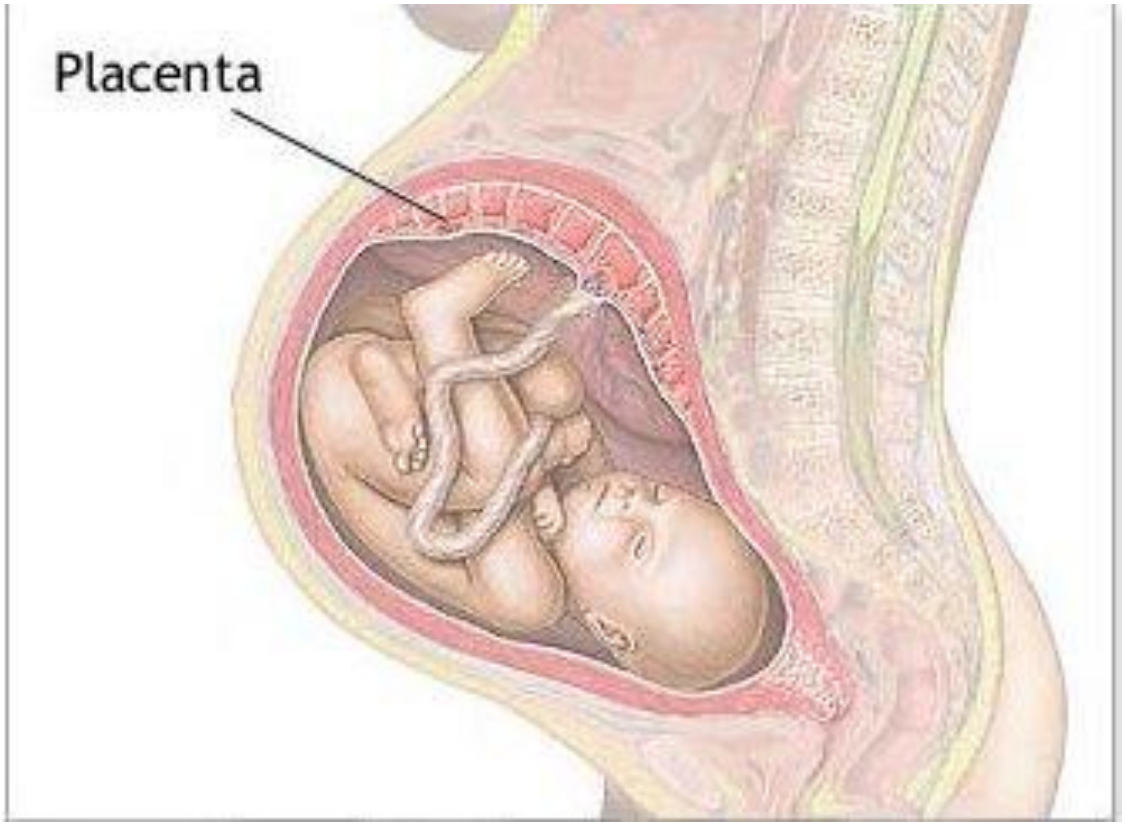
Significant incremental opportunity in 2016

INTERNATIONAL GROWTH

- Regulatory Established:
  - Canada
  - United Kingdom
  - Switzerland
  - Slovenia
  - Italy
  - Ireland
  - Korea
- Current Targets:
  - Japan
  - Germany
  - Austria
  - Australia
  - Middle East



PRODUCT & PLATFORM DEVELOPMENT



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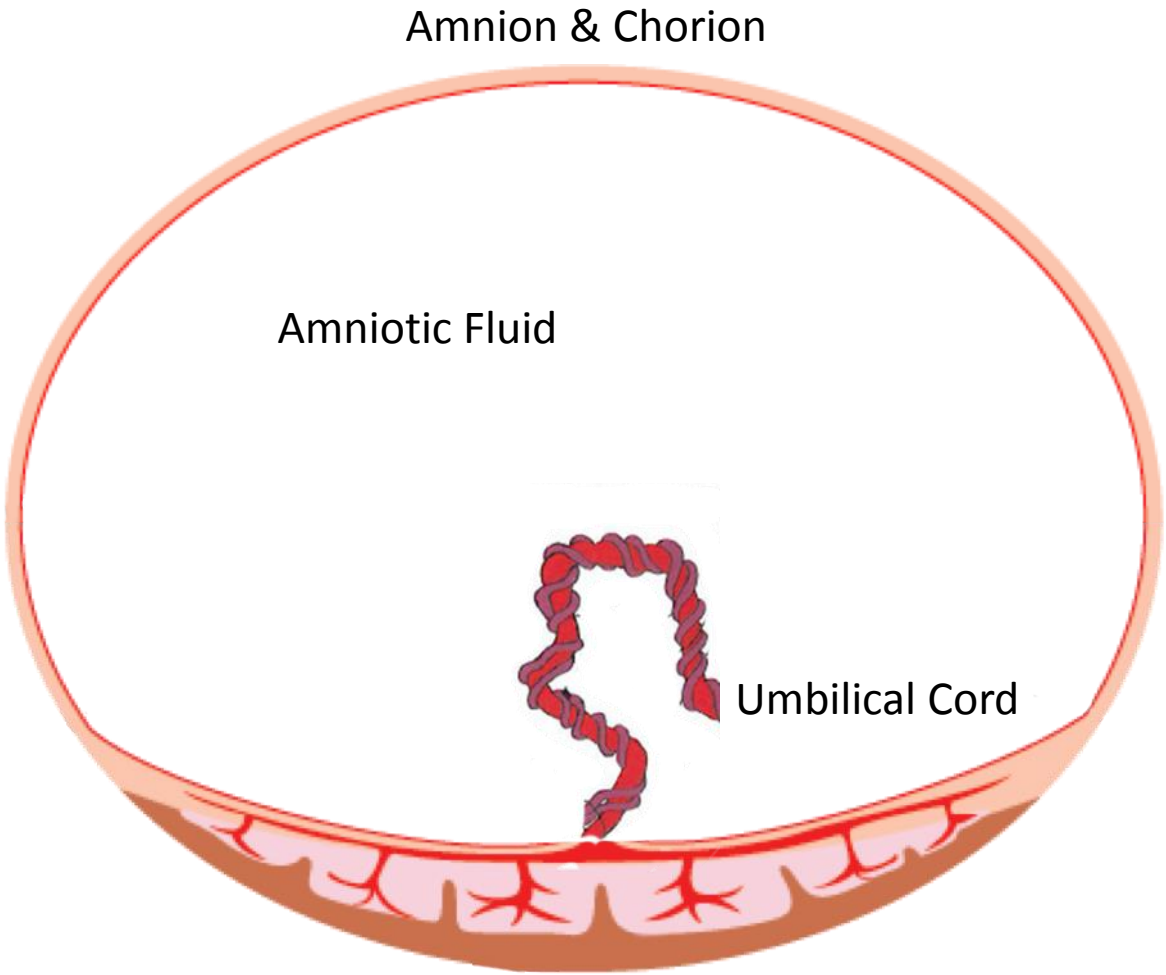
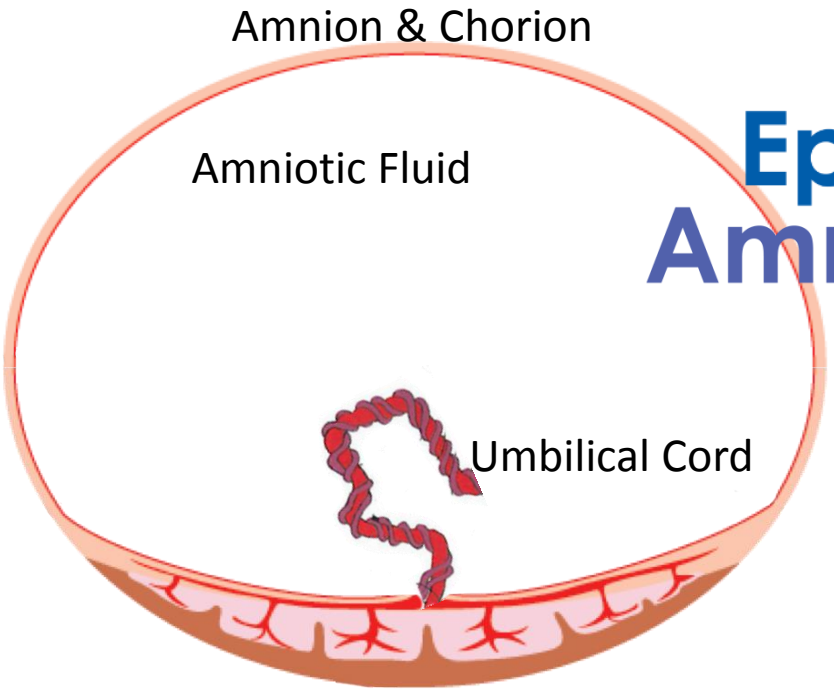
PRODUCT & PLATFORM DEVELOPMENT



PRODUCT & PLATFORM DEVELOPMENT



EpiFix®
AmnioFix®

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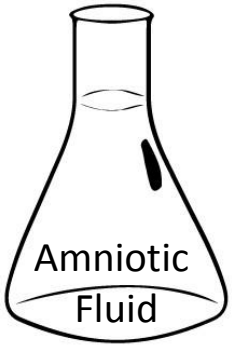
PRODUCT & PLATFORM DEVELOPMENT

OrthoFlo™

Amnion & Chorion

EpiFix®
AmnioFix®



Amniotic Fluid

Placental Disk

Thick Surgical Grafts

Umbilical Cord

Placental ECM &

ColLaFix™

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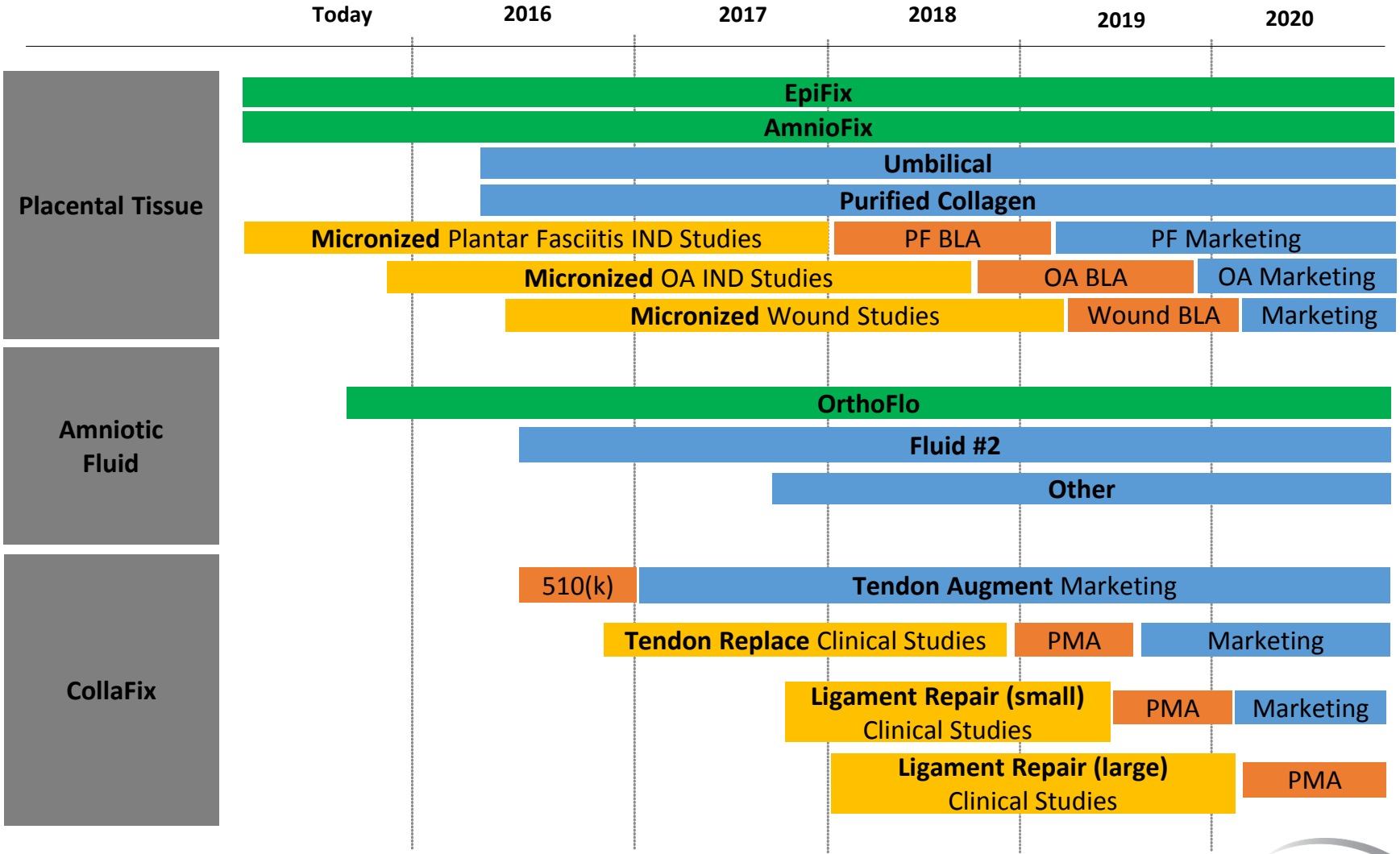
PARTIAL PRODUCT PIPELINE



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U.S. MARKET SUMMARY

- Advanced Wound Care
  - Chronic ulcers: diabetic, venous, arterial, pressure
  - Acute wounds: trauma
  - Number of targeted advanced wounds: 2.9 Million
  - US addressable market opportunity $7.7 Billion
- Surgical
  - Types of procedures: prostatectomies, C-sections, hysterectomy, bowel resections, scar revision, MOHs, site dehiscence, burns
  - Number of targeted procedures: 2.7 Million
  - US addressable market opportunity $2.9 Billion
- Orthopedics, Spine, Sports Medicine
  - Types of procedures: cervical fixation, discectomy, rotator cuff, Achilles, tendinopathies, knee ligament, joint replacement, joint supplementation
  - Number of targeted procedures: 7.8 Million
  - US addressable market opportunity $5.7 Billion

Total U.S. Market Opportunities **$16+** Billion

References: BioMed GPS, 2014 US Wound Market Report; Millenium, 2014 LaprascopicDevices Market Analysis; Millenium, 2014 Orthopedic Soft Tissue Solutions; iData 2014 Soft Tissue Reinforcement & Regeneration & Spinal Implants; Pearl Diver 2011, US injection volumes

Patents

INTELLECTUAL PROPERTY

25

AMNIOTIC TISSUE

Issued and Allowed Patents

Plus 109 Pending Patents

Protection extending through 2027-2033

AmnioFix®

EpiFix®

Purion® process

34

COLLAFIX

Issued and Allowed Patents

Plus 38 Pending Patents

Protection extending through 2021-2033

CollaFix™

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PATENT LAWSUITS

- Filed 3 Lawsuits
- Transplant Technology, Inc. d/b/a Bone Bank IPR
  - EpiFix Configuration ‘494 Patent – **IPR DENIED**
    - PTAB fully denied IPR review of the ‘494 patent, which means that the primary EpiFix configuration patent stands as issued
  - Process ‘687 Patent
    - **3 of 5 grounds rejected**; PTAB granted review on two grounds
- MTF IPR
  - AmnioFix Configuration ‘701 Patent – **IPR DENIED**
    - PTAB fully denied IPR review of the ‘701 patent, which means that the primary AmnioFix configuration patent stands as issued
  - Process ‘437 Patent
    - **6 of 7 grounds rejected**; only one argument remains

Market Segment Overview

Chris Cashman

EVP & CCO

MARKET SEGMENT STRATEGY

- **CONTINUE SEGMENTATION FOCUS ALONG PRODUCT LINES**
  - Wound Care
  - Orthopedic / Spine / Sports Medicine
  - Surgery - General Abdominal/ UroGynecologic / Plastic

- **STRENGTHEN PRODUCT OFFERING IN PRIORITY SEGMENTS LEVERAGING CALL POINTS**
  - Complement current portfolio
  - Strengthen operating room position
  - Consolidate regenerative technology leader position

- **ACCELERATE INTERNAL PRODUCT DEVELOPMENT**
  - Line extensions
  - New forms of delivery
  - Invest in CollaFix, Human Collagen and Amniotic Fluid platforms

MIMEDX PRODUCT OVERVIEW

Wound Care	Surgical	Orthopedics, Spine, Sports Medicine
EpiFix®	AmnioFix® SURGICAL	AmnioFix®
EpiFix® MESH	EpiXL	AmnioFix® SPORTS MED
EpiFix® PARTICULATE	EpiBurn	OrthoFlo™
		ColaFix™ *
Direct Sales ~ 215 personnel		Agent & Distributor Sales

Medtronic - Spine
Zimmer Biomet – Ortho/Spine
IOP – Ophthalmic
Snoasis - Dental

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* CollaFix not commercially available

MIMEDX PRODUCT OVERVIEW – WOUND CARE

Wound Care

EpiFix®

EpiFix® MESH

EpiFix® PARTICULATE

Addressable U.S. Market Size $7.7B

Procedure Focus
Diabetic Foot Ulcer
Venous Leg Ulcer
Pressure Ulcer
Trauma

Surgical

AmnioFix® SURGICAL

EpiXL

EpiBurn

Orthopedics, Spine, Sports Medicine

AmnioFix®

AmnioFix® SPORTS MED

OrthoFlo™

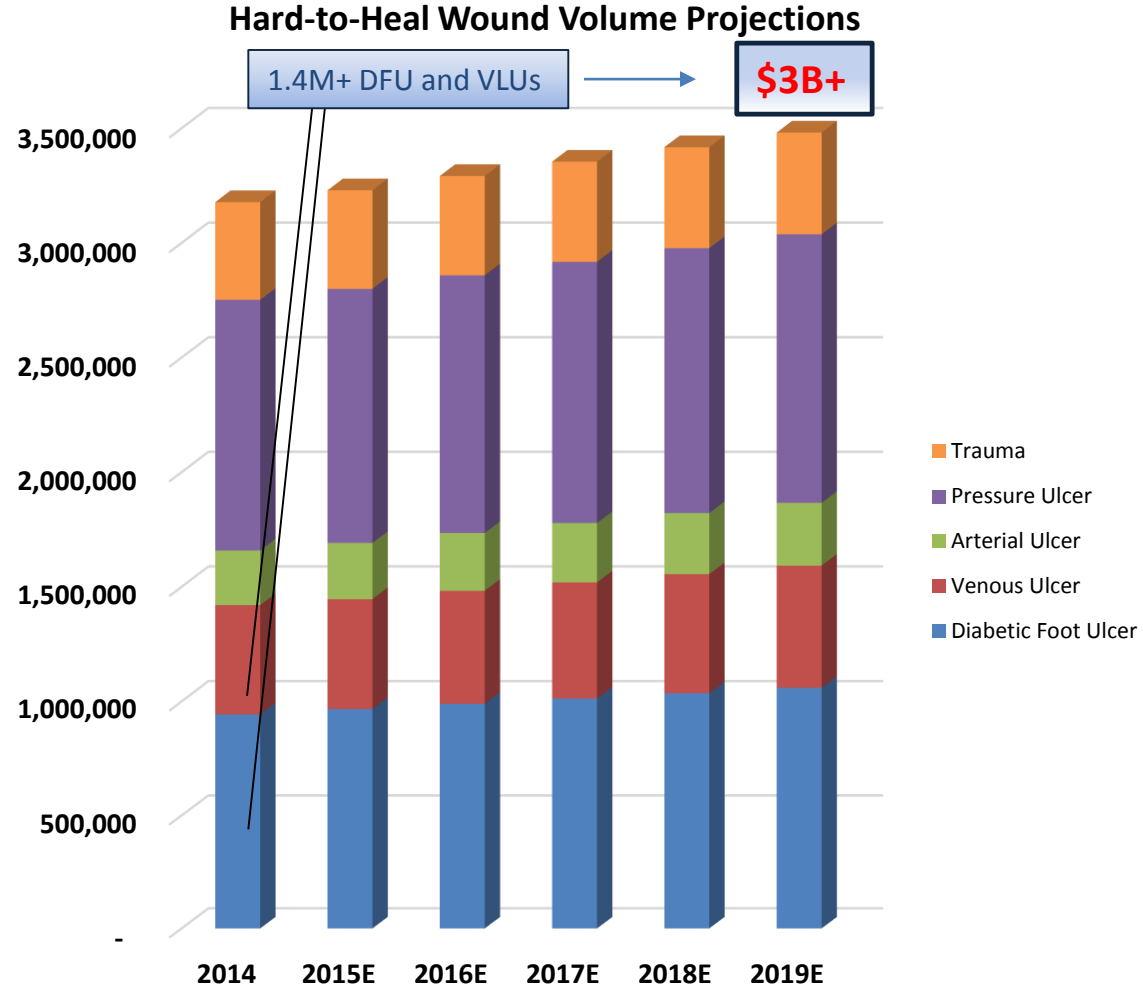
ColaFix™*

MiMedx

* CollaFix not commercially available

WOUND CARE OVERVIEW

3.2 million Chronic Wounds in the US alone



- 8.1M total wounds in the US (2015E)
- US Wound Biologics Market was $865M (2014) to grow to $1.4B Billion by 2019
  - US Skin Substitute Market $526MM (2014)
- 3.2 million Chronic Wounds in the US (2014)
- 4.2 million Chronic Wounds in Europe (2013)
- 17.0 million Chronic Wounds ROW (2013)

Source: SmartTRAK™ Business Intelligence Copyright® 2015 BiomedGPS LLC

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NO CONTEST: EPIFIX® DELIVERS SUPERIOR OUTCOMES VS. APLIGRAF®

Effectiveness

EpiFix healed **2x** as many wounds as Apligraf

At 6 weeks, 95% of EpiFix patients achieved complete healing vs. 45% of Apligraf patients

Time to Closure

EpiFix healed wounds almost **4x** faster than Apligraf

Median time to healing with EpiFix was 13 days vs. 49 days with Apligraf

Cost Savings

EpiFix was almost **1/5** the cost of Apligraf

Average costs:
EpiFix $1,669 – Apligraf $9,216

Wastage

Approximately **61.5** cm^2 of Apligraf grafts were wasted for every **1** cm^2 of EpiFix grafts

Product	Total # of Grafts purchased	Mean Grafts Used per Patient	Total cm^2 of Grafts Purchased	Total cm^2 of Grafts Applied	Total Cost of Grafts Applied	Average Patient Graft Cost
Apligraf®	***124***	***6.2***	**5,456**	**159**	***$184,315***	***$9,216***
EpiFix®	***43***	***2.15***	**154**	**68**	***$ 33,379***	***$1,669***

Zelen CM, Gould L, Serena TE, Carter MJ, Keller J, Li WW. A prospective, randomised, controlled, multi-centre comparative effectiveness study of healing using dehydrated human amnion/chorion membrane allograft, bioengineered skin substitute or standard of care for treatment of chronic lower extremity diabetic ulcers. Int Wound J. 2014 Nov 26. doi: 10.1111/iwj. 12395. .

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CLINICAL BODY OF EVIDENCE

- MiMedx has 25 Published Clinical and Scientific Studies; 5 RCTs; Level I Comparative Study (Apligraf)
- Published Primer
- 247 million lives covered to date

All Amniotic Membrane Products Are Not Equal

MEASURES	EPIFIX	GRAFIX	BIOVANCE	AMNIOEXCEL	NEOX 100
Healing Rates: DFU Study	77% at 4 weeks 92% at 6 weeks 92% at 12 weeks	62% at 12 weeks	29% at 12 weeks	NO CLINICAL TRIALS	NO CLINICAL TRIALS
Average number of treatments to closure	2.5	6			
DFU Crossover Study	91% at 8 weeks				
DFU Weekly vs. Biweekly Study	92% at 12 weeks				
DFU Long Term Ulcer Recurrence Rate Study	5.6% at 9-12 months	17.8% at 12 weeks			
EpiFix vs. Apligraf® DFU Study	85% at 4 weeks 95% at 6 weeks				
VLU Study Healing Rates	62% achieved ≥ 40% healing at 4 weeks				
Total Number of Patients Included in Respective Treatment Arms	137	50	14	0	0
PURION® process	Excluded wounds with 20% reduction at week 2	Excluded wounds with 30% reduction at week 1	Pilot Study		

12. Lavery LA, et al. The ecacy and safety of Grax(®) for the treatment of chronic diabetic foot ulcers: results of a multi-centre, controlled, randomised, blinded, clinical trial. Int Wound J. 2014 Oct;11(5):554-60.
13. Letendre S, LaPorta G, O'Donnell E, Dempsey J, Leonard K. Pilot trial of biovance collagen-based wound covering for diabetic ulcers. Adv Skin Wound Care. 2009 Apr;22(4):161-6.

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MIMEDX PRODUCT OVERVIEW

Wound Care

EpiFix®

EpiFix® MESH

EpiFix® PARTICULATE

Surgical

AmnioFix® SURGICAL

EpiXL

EpiBurn

Addressable U.S. Market Size: $2.9B

Procedure Focus
Urology
OB/Gynecology
Plastic Reconstruction
General & Colorectal
Burn

Orthopedics, Spine, Sports Medicine

AmnioFix®

AmnioFix® SPORTS MED

OrthoFlo™

ColaFix™*

MiMedx

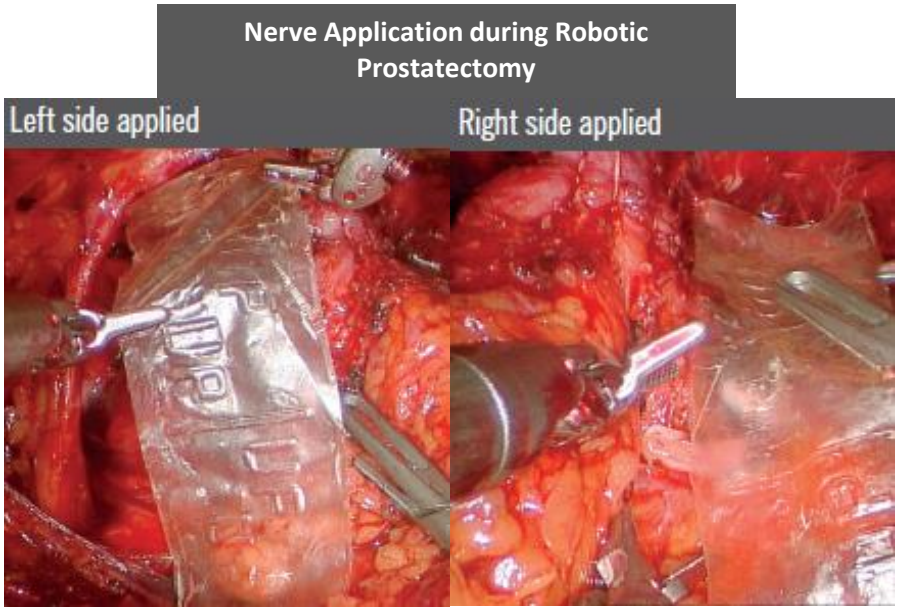
* CollaFix not commercially available

U.S. SURGICAL MARKET

AmnioFix SURGICAL

A BIOACTIVE TISSUE MATRIX ALLOGRAFT THAT:

- Modulates Inflammation
- Reduces Scar Tissue Formation
- Enhances Healing
- Acts as a Barrier Membrane



	GROUP 1	GROUP 2	p VALUE
Return to Continence at 8 weeks	81.00%	74.10%	0.373
Potency at 8 weeks	65.50%	51.70%	0.132
Mean Time to Continence	1.21 Months	1.83 Months	0.033
Mean Time to Potency	1.34 Months	3.39 Months	0.007

Source: Patel VR, et al. Dehydrated Human Amnion/Cho9rion Membrane Allograft Nerve Wrap Around the Prostatic Neurovascular Bundle Accelerates Early Return to Continence and Potency Following Robot-assisted Radical Prostatectomy: Propensity Score-matched Analysis. Eur Urol. 2015 Jan 19, http://dx.doi.org/10.1016/j.eururo.2015.01.012

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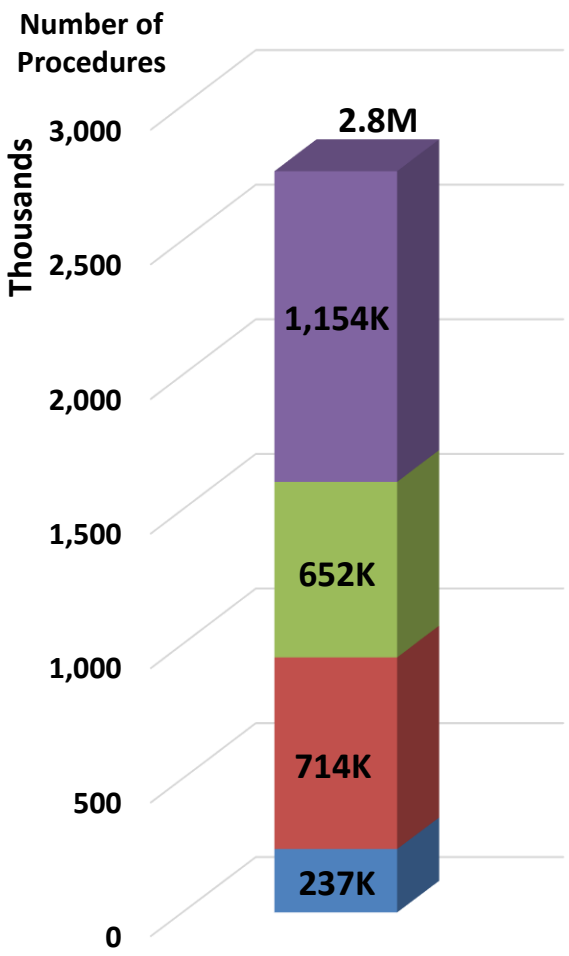
U.S. SURGICAL ADDRESSABLE MARKET

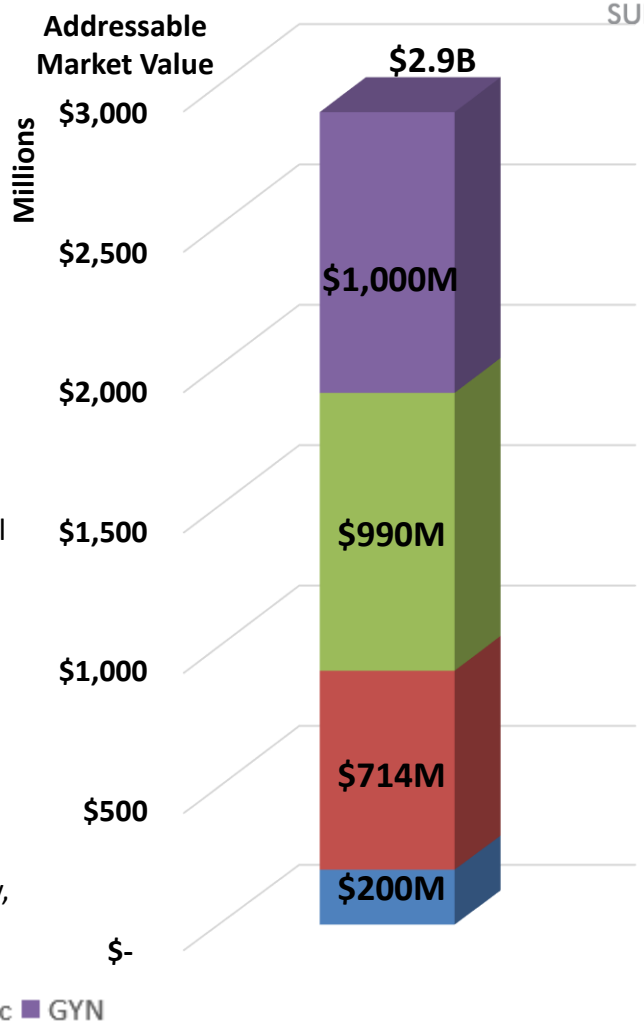


GYN
Hysterectomy
Endometriosis
Myomectomy
C-Section

PLASTICS
Hand-Tendon and Nerves, Mohs, Scar Revision, Skin Grafting, Surgical Site Dehiscence, Burn

GENERAL COLORECTAL
Bariatric, Fistula Repair, GI Anastomosis

UROLOGY
Prostatectomy, Partial Nephrectomy, Cystectomy



Source: Millenium Research Group, MRG Lap 2014, ASPS Statistics, MiMedx 2015 Annual Plan, MiMedx internal coding data, Management Estimates

MIMEDX PRODUCT OVERVIEW

Wound Care

EpiFix®

EpiFix® MESH

EpiFix® PARTICULATE

Surgical

AmnioFix® SURGICAL

EpiXL

EpiBurn

Orthopedics, Spine, Sports Medicine

AmnioFix®

AmnioFix® SPORTS MED

OrthoFlo™

Colla Fix™ *

Addressable U.S. Market Size: $5.7B

Procedure Focus

Spine Fusion

Hip, Knee

Shoulder

Joint pain, inflammation

Cranial

MiMedx

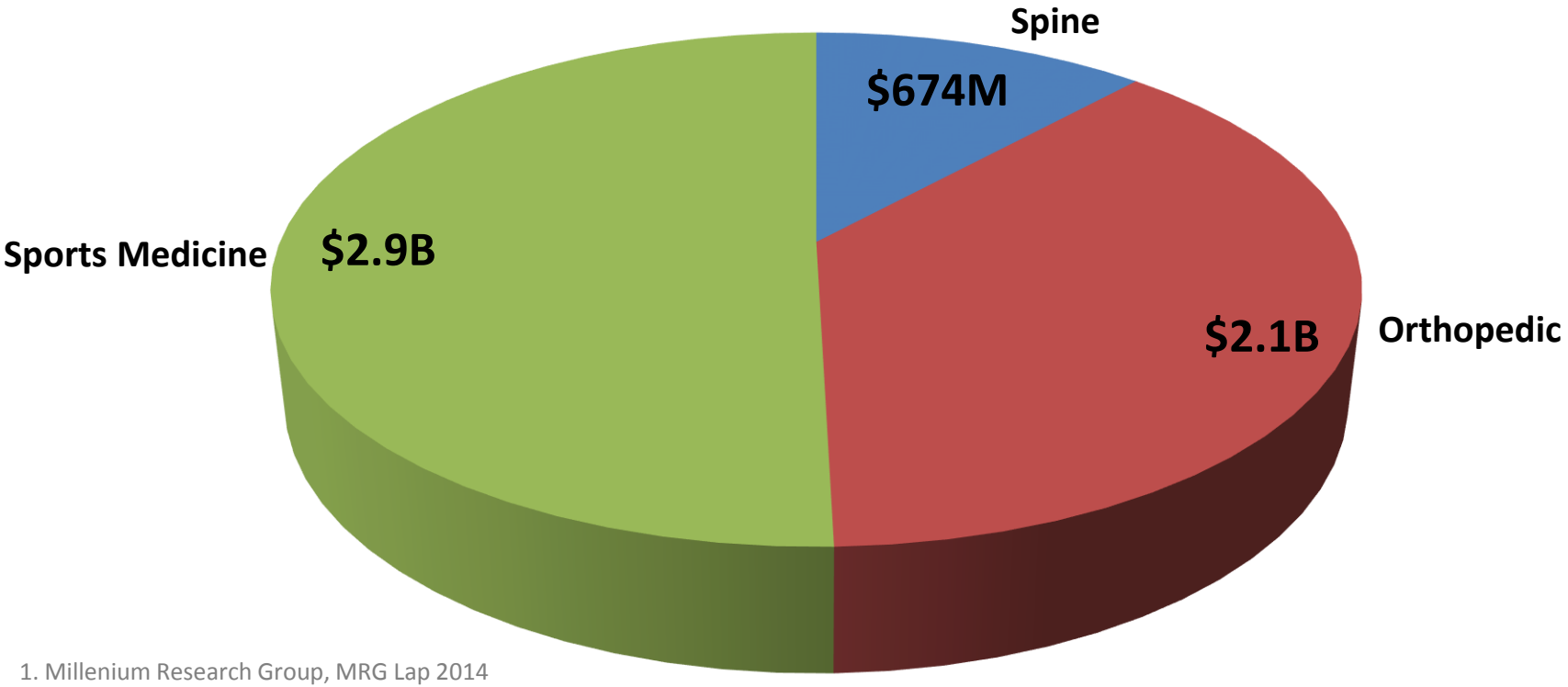
* CollaFix not commercially available

TOTAL U.S. MARKET OPPORTUNITY

AmnioFix®

U.S. Market - Spine, Orthopedics & Sports Medicine (2014)

$5.7B Estimated Addressable Market



1. Millenium Research Group, MRG Lap 2014
2. iDATA, 2014 Soft Tissue Reinforcement, Regeneration and Spinal Implants
3. Pearl Diver, 2011, US Orthopedic Injection Volumes

Management Estimates

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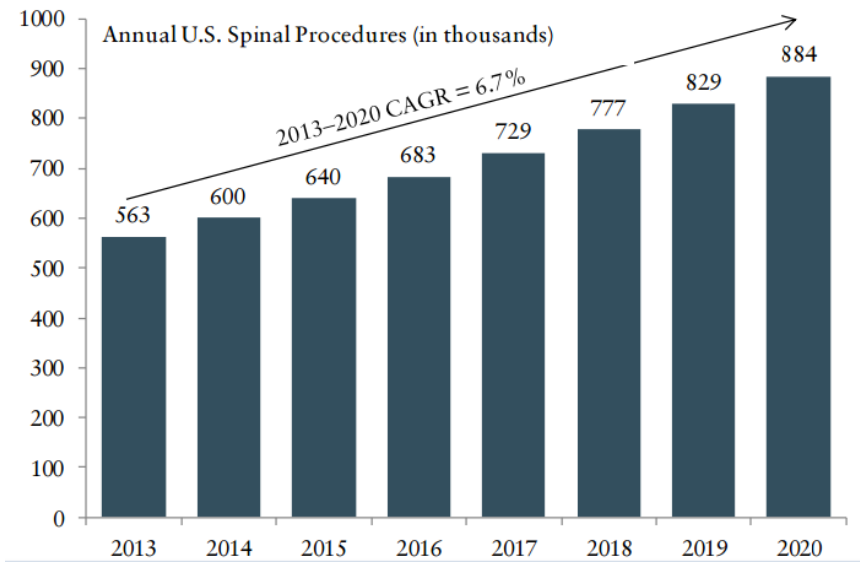
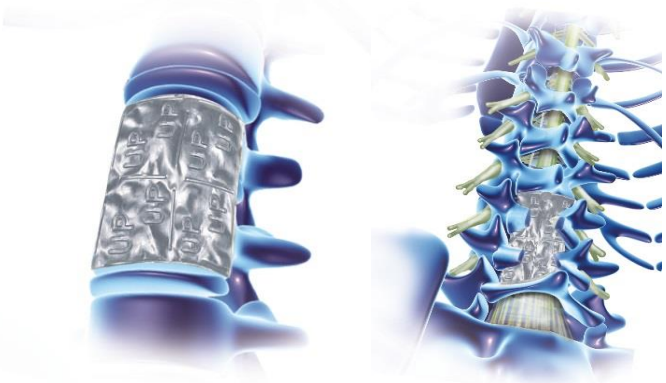
U.S. MARKET OPPORTUNITY - SPINE

- 2015E US Spinal Fusion market is expected to reach $4.6B
  - Procedure volumes are estimated to reach 620,572 in 2015 and projected to exceed 759,000 in 2019.
  - Cervical fusions drove $1.18B in revenues (2014), accounting for 26.8% of the total US fusion market.

- Applicable Spine procedures
  - Microdiscectomy
  - Laminectomy
  - Scoliosis, Adult & Pediatric, including Growth Rod procedures
  - Anterior Cervical Discectomy & Fusion (ACDF)
  - Posterior Lumbar Fusion (PLIF)
  - Anterior Lumbar Fusion (ALIF)
  - eXtreme Lateral Interbody Fusion (XLIF)



Source: Frost & Sullivan


Anterior

Posterior

Source: SmartTRAK™ Business Intelligence Copyright® 2015 BiomedGPS LLC

INTRODUCING ORTHOFLO

- An Amniotic Fluid Derived Allograft for Homologous Use to:
  - Protect & cushion
  - Provide lubrication
  - Reduce inflammation
- Available in four configurations:
  - 0.25, 0.50, 1.0 and 2.0mL
- Stored at -80 ^{o}C
- Minimal preparation required – thaw & use in clinic
- Donated by consenting mothers delivering healthy babies by scheduled Cesarean section

OrthoFlo

MiMedx

FUNCTIONS OF AMNIOTIC FLUID

- Positioned to address the needs of patients earlier in the care continuum, when other conservative treatments have not provided symptomatic relief of inflammation.

- OrthoFlo may additionally be considered to address the growing market interest in regenerative therapies to treat symptoms of Osteoarthritis.

- Amniotic fluid contains:
  - Nutrients that facilitate fetal growth[1]
  - Carbohydrates, proteins, lipids, electrolytes & water[1]
  - Hyaluronic acid (HA), a principle component of viscosity and lubrication in synovial fluid[2]
  - Antimicrobial effectors[1]
  - Growth factors[1]

OrthoFlo

1. Underwood M, Gilbert W, Sherman M. Amniotic Fluid: Not Just Fetal Urine Anymore. Journal of Perinatology. 2005(25):341-348.
2. Nyman A, Huss F, Nyman T, Junker J, Kratz G. Hyaluronic Acid, an important factor in the wound healing properties of amniotic fluid: In vitro studies of re-epithelialisation in human skin wounds. J Plast Surg Hand Surg, 2013; 47:89-92.

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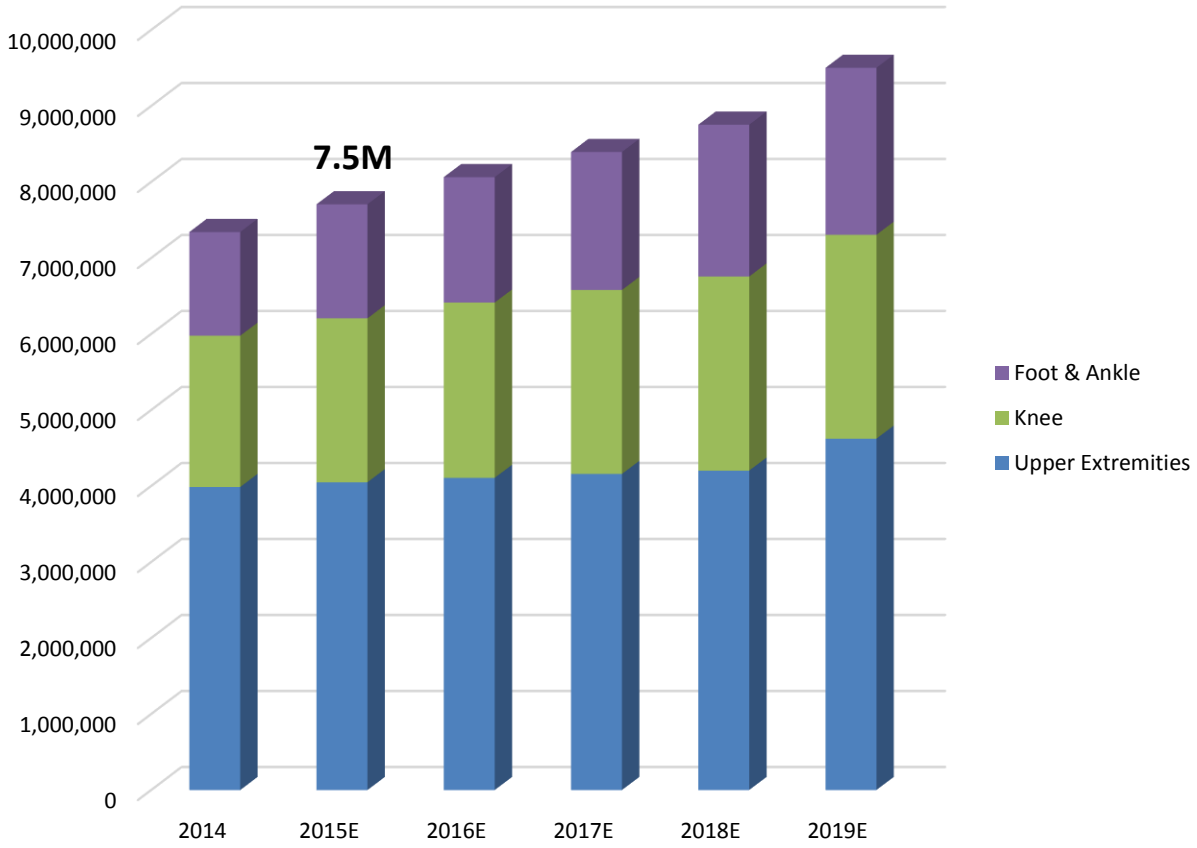
U.S. MARKET OPPORTUNITY – SPORTS MEDICINE

US Procedures for Amniotic/Placental Derived Injectables
Anti in-flammatory, pain management 2014-2019E



OrthoFlo™

Amniotic fluid contains many of the same components as healthy synovial fluid

OrthoFlo may supplement the ability of existing synovial fluid to lubricate and protect

May enhance and complement the intrinsic properties of synovial fluid

Hyaluronic Acid (HA) / Viscosupplementation ~$880 million in U.S 2014

Platelet Rich Plasma[1] globally projected at $120 million by 2016

1. Dhillon, Robinder S, Edward M Schwarz, and Michael D Maloney. Platelet-Rich Plasma Therapy - Future or Trend? Arthritis Research & Therapy 14.4 (2012): 219. PMC. Web. 26 Aug. 2015.
2. SmartTRAK™ Business Intelligence Copyright® 2015 BiomedGPS LLC

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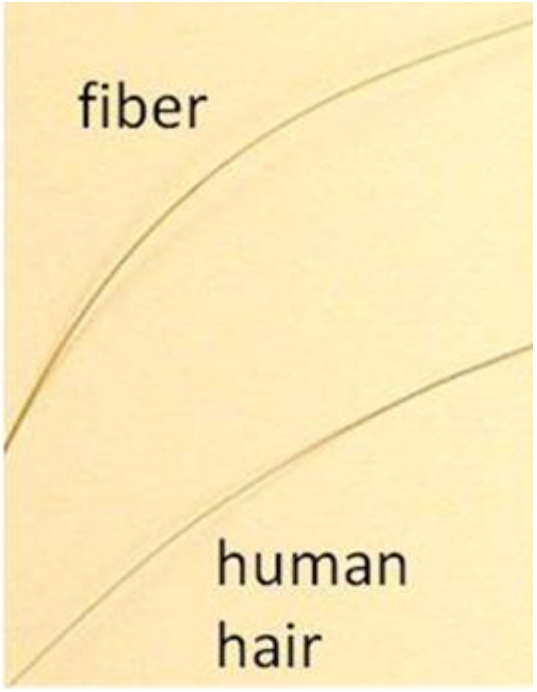
SPORTS MEDICINE MARKET OVERVIEW

COLLAGEN FIBER SCAFFOLD Technology

CollaFix™

IN DEVELOPMENT

- Similar strength and stiffness to human tendon
- Proprietary manufacturing process
- Braided, woven or knitted into typical fabric structures or other geometries
- Low immunogenic response
- Has numerous possible implant and wound healing applications
- Can absorb and deliver antibiotics and stem cells



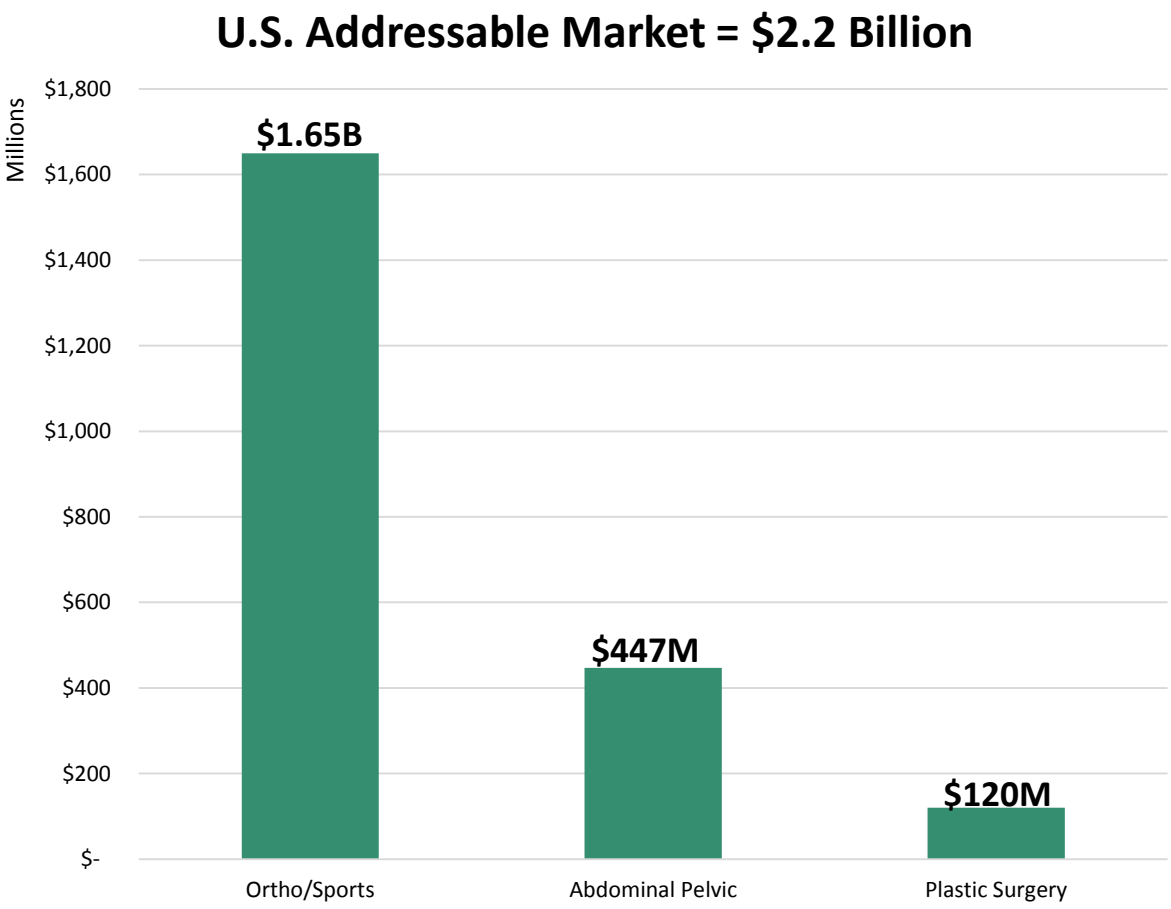
MiMedx

CollaFix not commercially available

SPORTS MEDICINE MARKET OVERVIEW

COLLAGEN FIBER SCAFFOLD Technology

CollaFix™



Initial 510(K) approval focused on U.S. Tendon Augment and Reinforcement

Source: Millennium Research Group

MiMedx

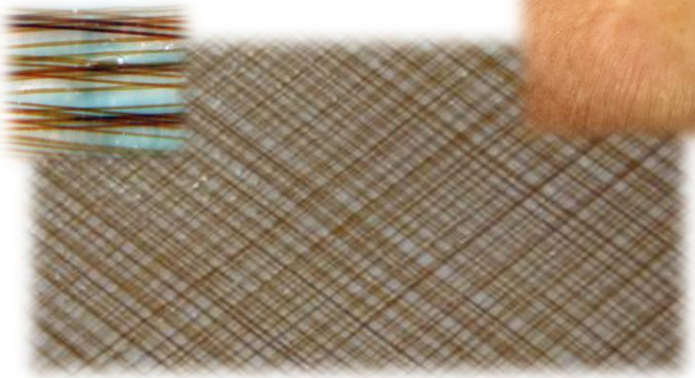
SPORTS MEDICINE MARKET OVERVIEW

COLLAGEN FIBER SCAFFOLD Technology

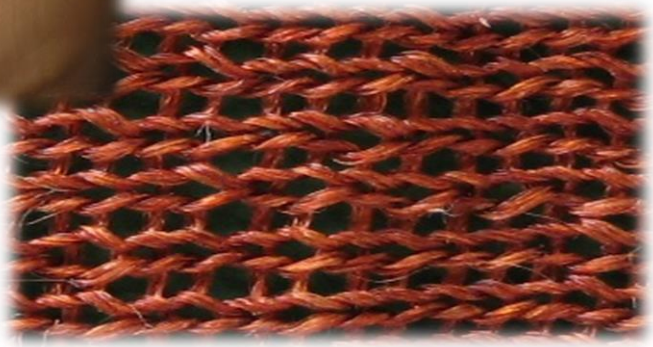
CollaFix™

Cables

BioStaple



Patches



Knits

MiMedx

GLOBAL EXPANSION

- Currently established or registering in major EU and ROW countries
- Established and/or partnered in:
  - UK, Switzerland, Italy, Ireland, Slovenia
  - Canada
  - Korea
- Focused on establishing:
  - EU, 5 countries
  - Australia
  - Japan
  - Middle East
- Meaningful revenues forecasted for second half 2016/early 2017

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

Research

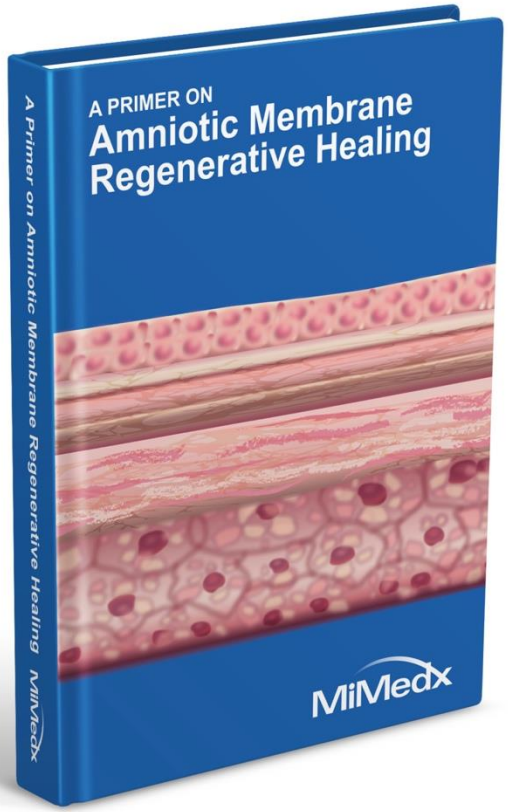
Thomas Koob, Ph.D.

Chief Scientific Officer

RESEARCH DEPARTMENT STAFF

- Thomas J. Koob, PhD — Chief Scientific Officer
- Conan Young, PhD — Director of Research
- Michelle Massee — Manager Biomedical Research
- Including 6 PhDs and staff; combined 90 years of R&D experience
- Staff: Experts in pre-clinical research, protein biochemistry, human cell cultures, flow cytometry, biomedical engineering

PRIMER



THE ESSENTIAL GUIDE TO THE CLINICAL EFFICACY AND SCIENCE OF AMNIOTIC MEMBRANE.

Available in the display room

MiMedx®

THREE PEER REVIEWED PUBLICATIONS IN 2015

Journal of Surgical Research

Cell recruitment by amnion chorion grafts promotes neovascularization

Zeshaan N. Maan, MBBS, MS, MRCS,[a,1] Robert C. Rennert, BA,[a,1] Thomas J. Koob, PhD,[b] Michael Januszyk, MD,[a] William W. Li, MD,[c] and Geoffrey C. Gurtner, MD[a,]*

[a] *Division of Plastic and Reconstructive Surgery, Department of Surgery, Stanford University School of Medicine, Stanford, California*
[b] *MiMedx Group, Inc., Marietta, Georgia*
[c] *Angiogenesis Foundation, Cambridge, Massachusetts*

Proved dHACM is a Stem Cell Magnet

THREE PEER REVIEWED PUBLICATIONS IN 2015

Journal of Biomedical Materials Research

Society For Biomaterials

Dehydrated human amnion/chorion membrane regulates stem cell activity *in vitro*

Michelle Massee,* Kathryn Chinn,* Jennifer Lei, Jeremy J. Lim, Conan S. Young, Thomas J. Koob
MiMedx Group, Inc. 1775 West Oak Commons Court NE, Marietta, Georgia 30062

Received 25 November 2014; revised 29 May 2015; accepted 15 June 2015
Published online 00 Month 2015 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/jbm.b.33478

Proved that dHACM regulates bioactivity of all stem cell classes: Mesenchymal stem cells, adipose derived stem cells and hematopoietic stem cells

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THREE PEER REVIEWED PUBLICATIONS IN 2015

DISCOVERY EXPRESS

Advances in Wound Care

WHS Wound Healing Society

Type I and II Diabetic Adipose-Derived Stem Cells Respond *In Vitro* to Dehydrated Human Amnion/ Chorion Membrane Allograft Treatment by Increasing Proliferation, Migration, and Altering Cytokine Secretion

Michelle Massee,* Kathryn Chinn,* Jeremy J. Lim, Lisa Godwin, Conan S. Young, and Thomas J. Koob

MiMedx Group, Inc., Marietta, Georgia.

**These authors contributed equally to this work.*

Proved that dHACM reinvigorates diabetic stem cells

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MIMEDX TECHNOLOGIES

Amniotic Membrane dHACM

- PURION® Processed
- Rich in essential growth factors
- Modulates inflammation
- Reduces scar formation
- Immunoprivileged

Amniotic Fluid

- Rich in hyaluronic acid
- Rich in essential growth factors
- Provides lubrication and cushioning
- Immunoprivileged

CollaFix*

- Human placental collagen based fibers
- Strength equivalent to tendon and ligament
- Inductive scaffold
- Biocompatible
- Bioresorbable

*** Not commercially available**

Dehydrated Human Amnion Chorion Grafts dHACM

MiMedx

DEHYDRATED HUMAN AMNION CHORION MEMBRANE dHACM

PURION® Processed

Bilayer Laminate Composed of Amnion and Chorion

Cells preserved

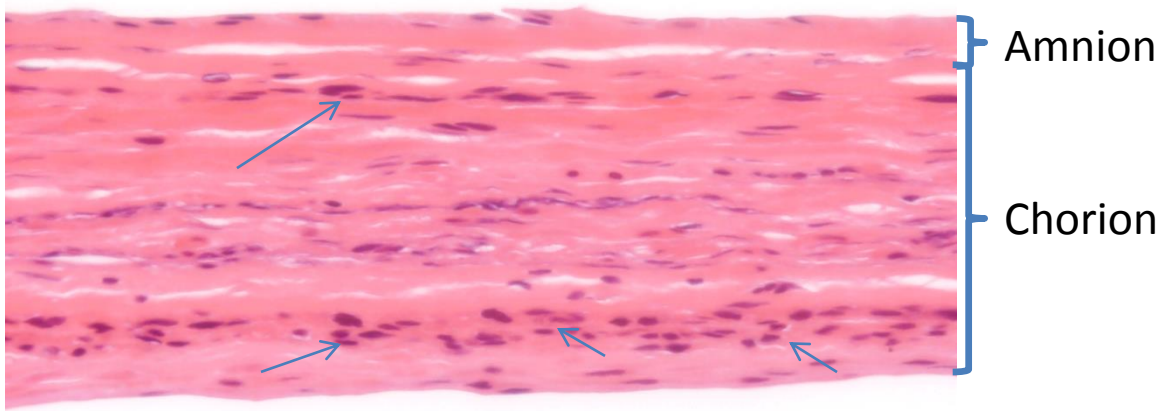
- Not 'acellular'
- Structurally intact
- Bioactive

Extracellular matrix intact

- Collagens I, III, IV, V, VII
- Laminin, fibronectin, proteoglycans

Biological activity preserved

- Growth factors, cytokines, chemokines



H&E – cell nuclei stained purple

MiMedx

57 PRESERVED GROWTH FACTORS, CYTOKINES, AND CHEMOKINES IN dHACM[1,2,3]

Regulators of *Wound Healing* in EpiFix® and AmnioFix®	
CYTOKINES	
Ang	IGFBP-2
ANG-2	IGFBP-3
bFGF	IGFBP-4
BMP-5	IGFBP-6
BDNF	β-NGF
EG-VEGF	PlGF
EGF	PDGF-AA
FGF-4	PDGF-BB
KGF; FGF-7	TGF-α
GH	TGF-β1
HB-EGF	VEGF
HGF	TIMP-1
IGF-I	TIMP-2
IGFBP-1	TIMP-4

Regulators of *Inflammation* in EpiFix® and AmnioFix®	
CYTOKINES	CHEMOKINES
GCSF	BLC
GM-CSF	Eotaxin-2
GDF-15	I-309
IFNγ	IL-8
IL-1α	IL-16
IL-1β	MCP-1
IL-1ra	MIG
IL-4,5,6,7,10	MIP-1α
IL-12p40	MIP-1β
IL-12p70	MIP-1d
IL-15	RANTES
IL-17	
MCSF	
OPG	

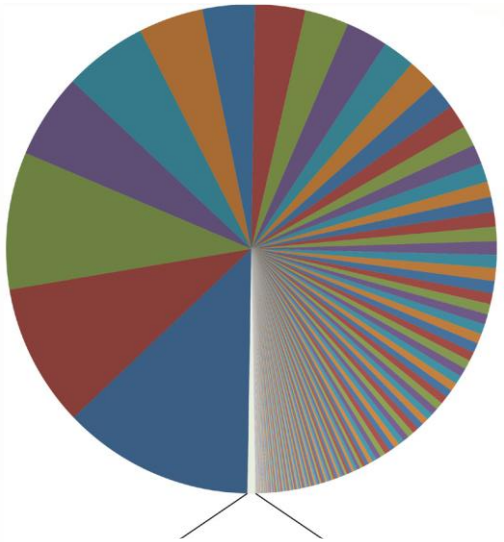
1. Koob, T; Rennert, R; Zabek, N; Massee, J; Lim, J; Temenoff, J; Li, W; and Gurtner, G. "Biological properties of dehydrated human amnion/chorion composite graft; implications for chronic wound healing." International Wound Journal (10)5: October 2013, pp. 493-500.
2. Koob, TJ, Lim JJ, Massee J, Zabek N, Rennert R, Gurtner G, Li WW. "Angiogenic properties of dehydrated human amnion/chorion allografts: therapeutic potential for soft tissue repair and regeneration." Vascular Cell 2014, 6:10.
3. Koob TJ, Lim JJ, Massee M, Zabek N, and Denoziere G. "Properties of dehydrated amnion/chorion composite grafts: Implications for wound repair and soft tissue regeneration." Journal of Biomedical Materials Research B Applied Biomaterials 2014, 102(6): 1353-1362.

MiMedx®

226 PRESERVED GROWTH FACTORS, CYTOKINES, AND CHEMOKINES IN dHACM[1]

- Angiostatin
- Galectin-7
- TIMP-2
- IL-1 F10
- IGFBP-2
- FLRG
- IGFBP-6
- Pentraxin 3
- Resistin
- CA9
- OSM
- TRAIL
- Thrombospondin-5
- WISP-1
- S100A8
- RGM-B
- Marapsin
- PGRP-S
- Thrombospondin-2
- aFGF
- FABP2
- OPG
- Trappin-2
- Dkk-4
- Lipocalin-2
- Cystatin C
- FGF-9
- IL-1ra
- Leptin
- MCSF
- Cripto-1
- GASP-1
- TFPI
- GRO
- GDNF
- PIGF
- Eotaxin-2
- IGFBP-3
- Thyroglobulin
- OPN
- Furin
- DKK-1
- GROa
- PF4
- BMP-5
- Granulysin
- Galectin-1
- DAN
- IL-21
- Clusterin
- MIF
- GDF-15
- CEA
- MIP-1a
- CXCL16
- CNTF
- TPO
- Procalcitonin
- sFRP-3
- FGF-19
- PDGF-AA
- MCP-1
- Kallikrein 5
- PARC
- FGF-21
- VEGF
- IP-10
- NT-3
- IL-18
- IL-8
- IL-1 F8
- VEGF-D
- I-309
- Eotaxin
- ACE-2
- NSE
- PAI-1
- IL-1 F5
- IL-1 F7
- Gas 1
- CRP
- HGF
- 6Ckine
- EG-VEGF
- Cystatin B
- CHI3L1
- IL-17C
- SP-D
- uPA
- ANG-4
- Shh-N
- TSH
- Renin
- NT-4
- GASP-2
- ANGPTL3
- FGF-6
- NAP-2
- BDNF
- ST2
- IL-34
- BAFF
- EGF
- GH
- IGF-I
- BTC
- TGFb3
- MIP-1d
- Ck beta 8-1
- IL-12p40
- Adiponectin
- TSP-1
- Angiotensinogen
- Serpin A4
- Midkine
- TGFb1
- IL-1 F6
- Dkk-3
- IL-1 F9
- Osteoactivin
- DcR3
- Fractalkine
- LAP(TGFb1)
- IGF-2
- DLL1
- PDGF-BB
- Angiogenin
- Cystatin A
- BMP-7
- MBL
- Cystatin E M
- NOV
- Eotaxin-3
- PDGF-AB
- IL-33
- SDF-1b
- IL-6
- BMP-9
- LIGHT
- TNFb
- IL-1a
- NRG1-b1
- FGF-7
- IL-32 alpha
- IL-7
- HB-EGF
- Pref-1
- Follistatin-like 1
- gp130
- RBP4
- hCGb
- Legumain
- Prolactin
- bIG-H3
- RANTES
- WIF-1
- Galectin-3
- Follistatin
- APRIL
- Insulin
- IL-24
- CF XIV
- ULBP-1
- Chemerin
- C5a
- MIG
- IL-23
- IL-17B
- VEGF-C
- IL-6sR
- MIP-1b
- ENA-78
- IL-20
- TGFb2
- Lymphotactin
- AgRP
- TNFa
- I-TAC
- Flt-3L
- IL-1b
- G-CSF
- IL-2
- Fetuin A
- ANGPTL4
- IGFBP-5
- Adipsin
- TIMP-1
- LRIG3
- IGFBP-1
- BMP-2
- HAI-2
- CXCL14
- IGFBP-4
- FSH
- TRANCE
- TWEAK
- Galectin-9
- ADAMTS13
- ANG-2
- MCP-2
- IL-27
- HCC-1
- Kallikrein 14
- bFGF
- ANG-1
- IL-16
- IL-11
- BLC
- IL-17E
- TIMP-4
- IL-3
- Galectin-2
- SCF
- GCP-2
- GM-CSF
- Activin A
- IL-15
- IL-4

Relative Content



Unique cocktail of broad ranging, bioactive regulating factors

Koob *et al.*, 2015, **Primer on Amniotic Membrane Regenerative Healing,** MiMedx

MiMedx®

TARGETS FOR DHACM REGENERATIVE THERAPY

Chronic and Acute Wounds and Injuries

Inflammatory Phase (Injury to 2-5 days)

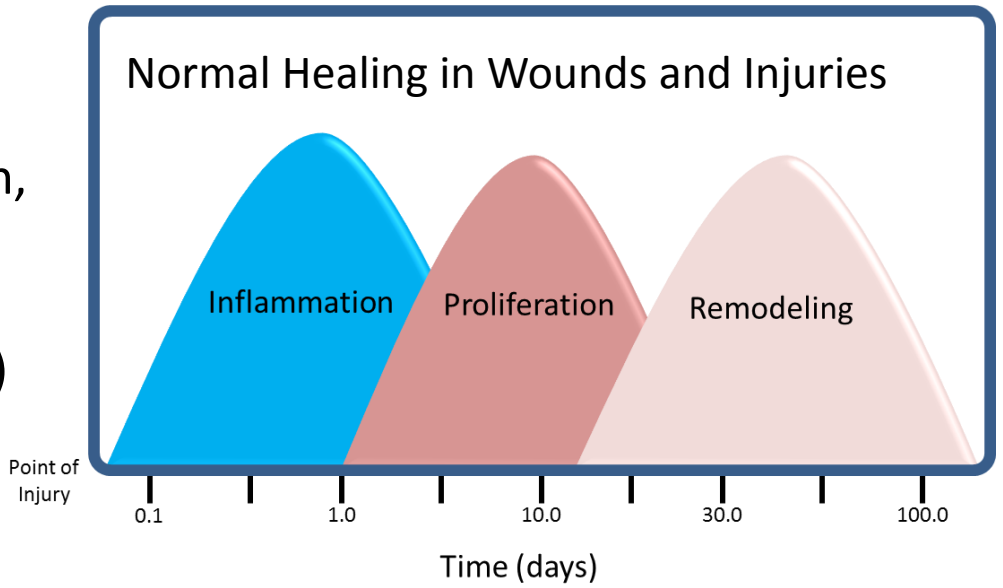
- Hemostasis, inflammation, chemotactic cellular signaling

Proliferative Phase (2 days to 3 weeks)

- Granulation, wound contraction, epithelialization/angiogenesis

Remodeling Phase (3 weeks to 2 years)

- New collagen synthesis and connective tissue formation
- May lead to fibrosis – amnion reduces scar tissue formation



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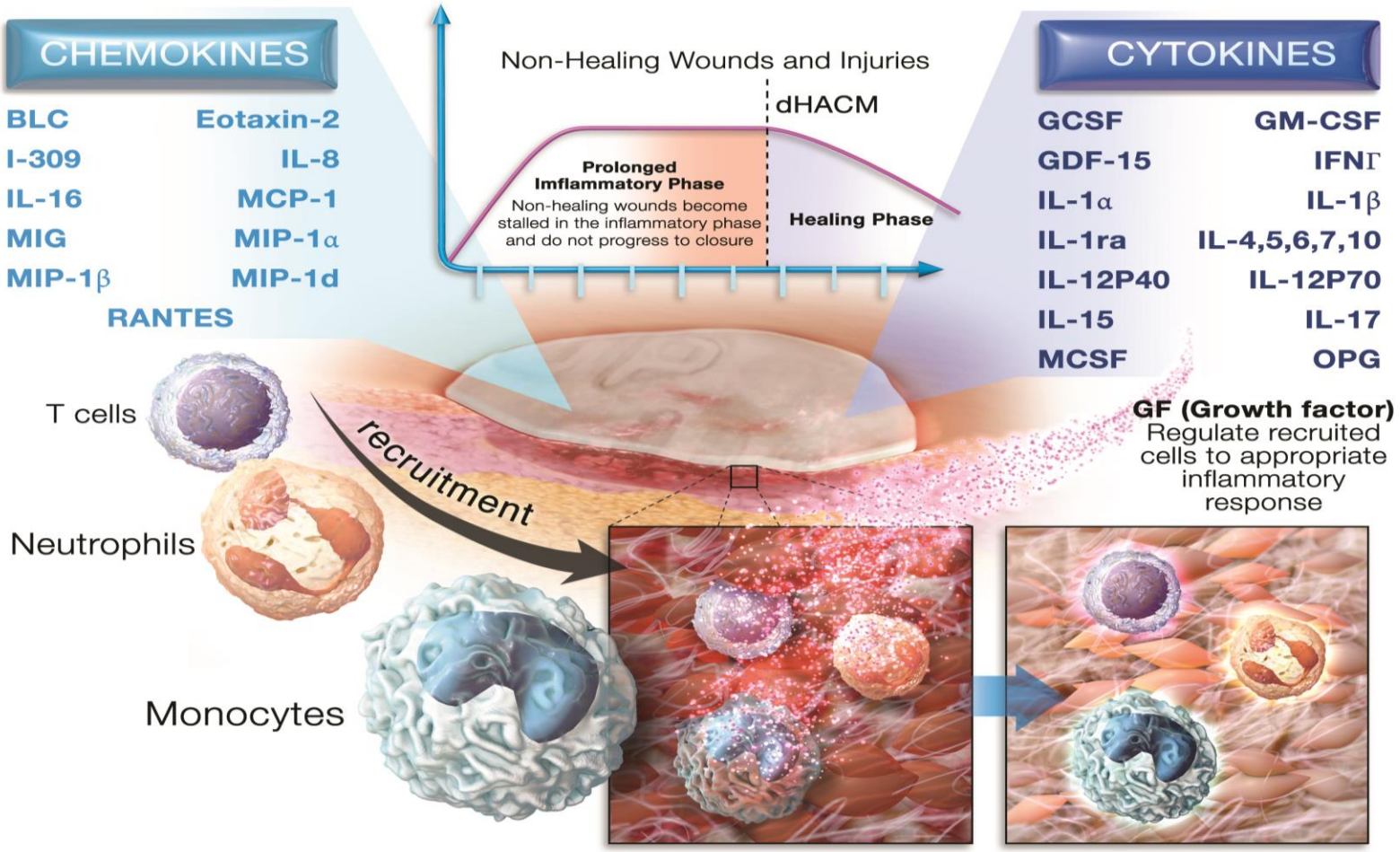
REGULATORS OF INFLAMMATION IN DHACM



Koob TJ, Lim JJ, Massee M, Zabek N, Denoziere G. Properties of dehydrated human amnion/chorion composite grafts: Implications for wound repair and soft tissue regeneration. Journal of Biomedical Materials Research Part B Applied Biomaterials, 2014, DOI: 10.1002/jbm.b.33141.

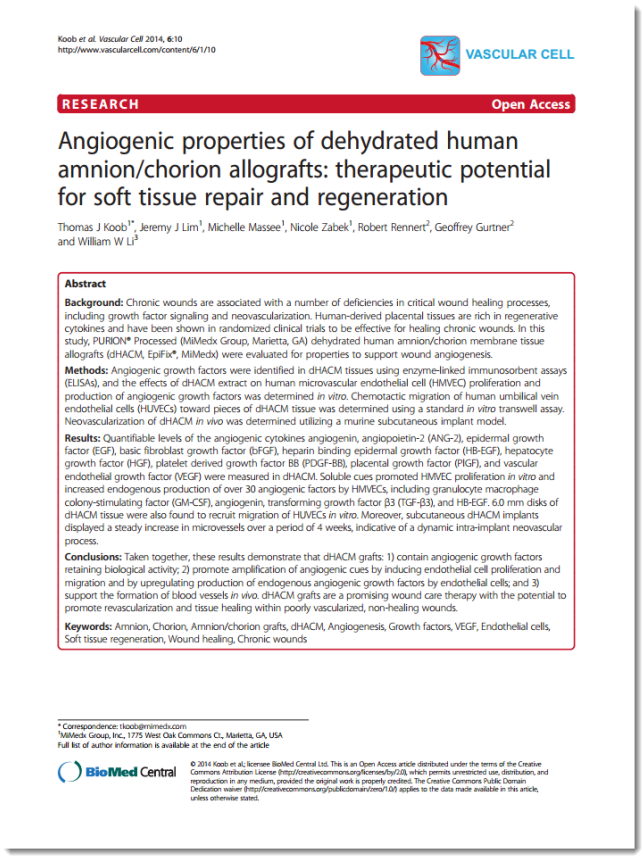
DHACM REGENERATIVE THERAPY: ANGIOGENIC PROPERTIES[1]

dHACM Contains an Array of Angiogenic Growth Factors

Growth Factor	
ANG	Migration, proliferation, vessel formation
ANG-2	Promotes neovascularization
EGF	Proliferation and differentiation
bFGF	Potent stimulator of angiogenesis
HB-EGF	Promotes angiogenesis
HGF	Important co-regulator of angiogenesis
Leptin	Increase VEGF
PDGF-BB	Promotes angiogenesis in wounds
PIGF	Potent stimulator of angiogenesis
VEGF	Potent stimulator of angiogenesis

1 Koob, TJ, Lim JJ, Massee J, Zabek N, Rennert R, Gurtner G, Li WW. "Angiogenic properties of dehydrated human amnion/chorion allografts: therapeutic potential for soft tissue repair and regeneration." Vascular Cell 2014, 6:10.

DHACM REGENERATIVE THERAPY: ANGIOGENIC PROPERTIES[1]



Koob *et al. Vascular Cell* 2014, **6**:10
http://www.vascularcell.com/content/6/1/10

VASCULAR CELL

RESEARCH Open Access

Angiogenic properties of dehydrated human amnion/chorion allografts: therapeutic potential for soft tissue repair and regeneration

Thomas J Koob[1*], Jeremy J Lim[1], Michelle Massee[1], Nicole Zabek[1], Robert Rennert[2], Geoffrey Gurtner[2] and William W Li[3]

Abstract

Background: Chronic wounds are associated with a number of deficiencies in critical wound healing processes, including growth factor signaling and neovascularization. Human-derived placental tissues are rich in regenerative cytokines and have been shown in randomized clinical trials to be effective for healing chronic wounds. In this study, PURION® Processed (MiMedx Group, Marietta, GA) dehydrated human amnion/chorion membrane tissue allografts (dHACM, EpiFix®, MiMedx) were evaluated for properties to support wound angiogenesis.

Methods: Angiogenic growth factors were identified in dHACM tissues using enzyme-linked immunosorbent assays (ELISAs), and the effects of dHACM extract on human microvascular endothelial cell (HMVEC) proliferation and production of angiogenic growth factors was determined *in vitro*. Chemotactic migration of human umbilical vein endothelial cells (HUVECs) toward pieces of dHACM tissue was determined using a standard *in vitro* transwell assay. Neovascularization of dHACM *in vivo* was determined utilizing a murine subcutaneous implant model.

Results: Quantifiable levels of the angiogenic cytokines angiogenin, angiopoietin-2 (ANG-2), epidermal growth factor (EGF), basic fibroblast growth factor (bFGF), heparin binding epidermal growth factor (HB-EGF), hepatocyte growth factor (HGF), platelet derived growth factor BB (PDGF-BB), placental growth factor (PlGF), and vascular endothelial growth factor (VEGF) were measured in dHACM. Soluble cues promoted HMVEC proliferation *in vitro* and increased endogenous production of over 30 angiogenic factors by HMVECs, including granulocyte macrophage colony-stimulating factor (GM-CSF), angiogenin, transforming growth factor β3 (TGF-β3), and HB-EGF. 6.0 mm disks of dHACM tissue were also found to recruit migration of HUVECs *in vitro*. Moreover, subcutaneous dHACM implants displayed a steady increase in microvessels over a period of 4 weeks, indicative of a dynamic intra-implant neovascular process.

Conclusions: Taken together, these results demonstrate that dHACM grafts: 1) contain angiogenic growth factors retaining biological activity; 2) promote amplification of angiogenic cues by inducing endothelial cell proliferation and migration and by upregulating production of endogenous angiogenic growth factors by endothelial cells; and 3) support the formation of blood vessels *in vivo*. dHACM grafts are a promising wound care therapy with the potential to promote revascularization and tissue healing within poorly vascularized, non-healing wounds.

Keywords: Amnion, Chorion, Amnion/chorion grafts, dHACM, Angiogenesis, Growth factors, VEGF, Endothelial cells, Soft tissue regeneration, Wound healing, Chronic wounds

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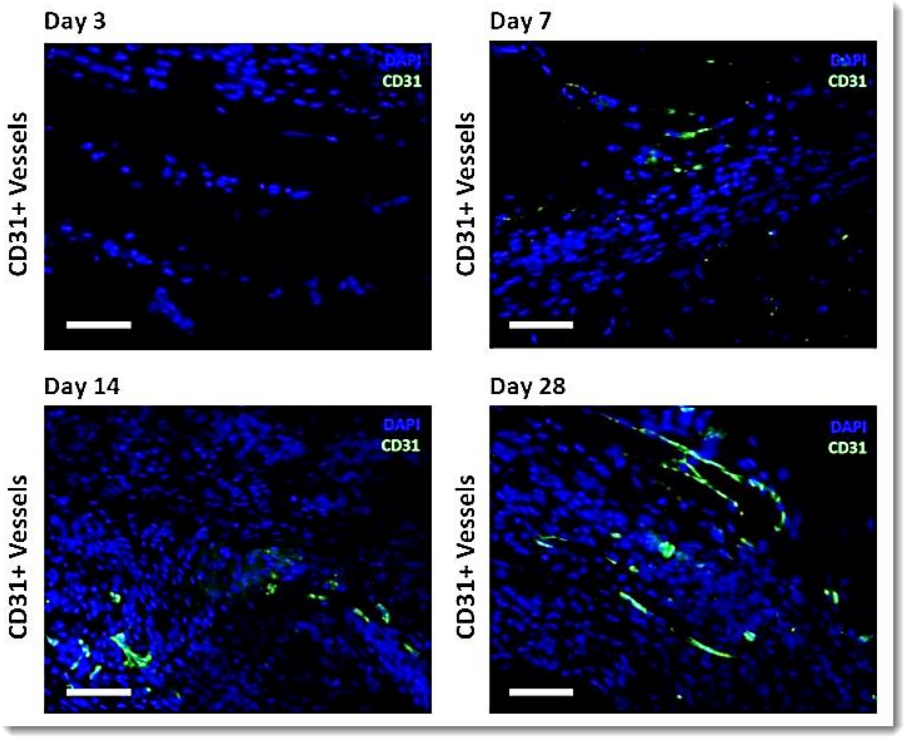
[1]MiMedx Group, Inc., 1775 West Oak Commons Ct., Marietta, GA, USA
Full list of author information is available at the end of the article



Microvessels were seen within the implanted dHACM over time, ultimately reaching the level of healthy and healing skin by day 28.

PURION Processed Allografts Promote Angiogenesis

1 Koob, TJ, Lim JJ, Massee J, Zabek N, Rennert R, Gurtner G, Li WW. "Angiogenic properties of dehydrated human amnion/chorion allografts: therapeutic potential for soft tissue repair and regeneration." Vascular Cell 2014, 6:10.

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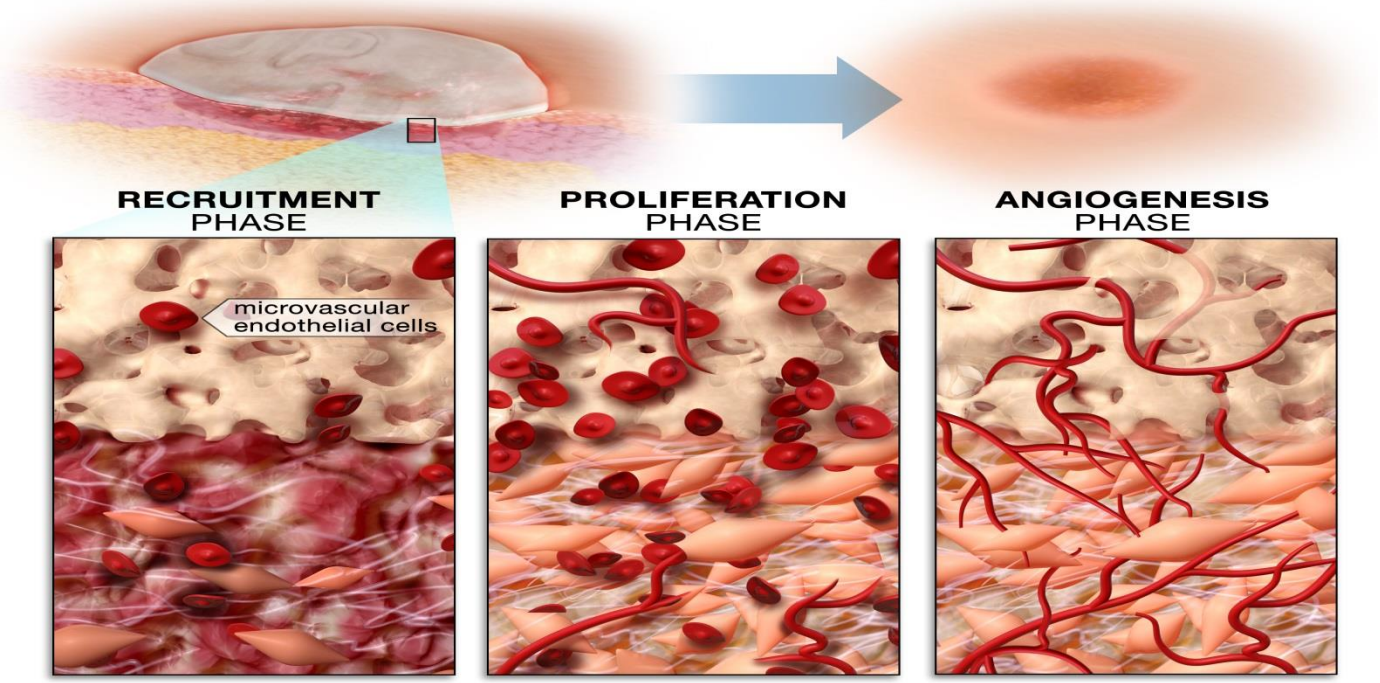
DHACM REGENERATIVE THERAPY: ANGIOGENIC PROPERTIES[1]

- Induces endothelial cell migration
- Causes endothelial cells to proliferate
- Upregulates biosynthesis of angiogenic factors by endothelial cells



1 Koob, TJ, Lim JJ, Massee J, Zabek N, Rennert R, Gurtner G, Li WW. "Angiogenic properties of dehydrated human amnion/chorion allografts: therapeutic potential for soft tissue repair and regeneration." Vascular Cell 2014, 6:10.

THE CHALLENGES OF LIVING STEM CELL THERAPIES

Two significant, interrelated challenges of live stem cell therapies:

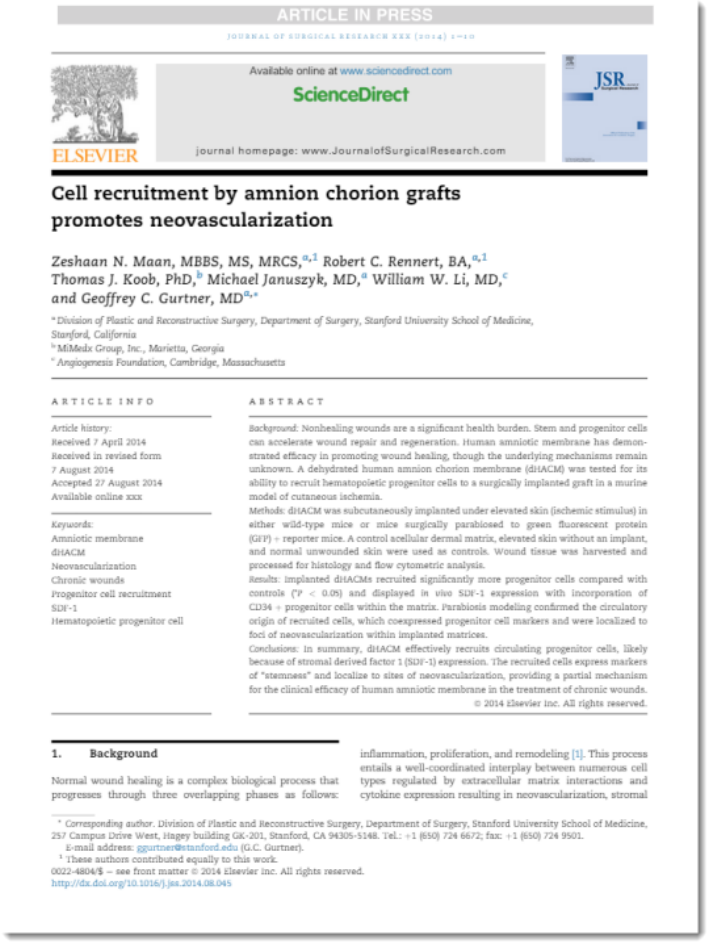
- **Little if any engraftment of applied stem cells**
  Here today, gone tomorrow
- **Low survival of cells at the site of application[1, 2, 3, 4]**

Solution

- **dHACM graft facilitates engraftment and survival of stem cells**

1. Hocking, AM. Exp Cell Res. 2010;316:2213-2219
2. Volarevic, V. Stem Cells. 2011;29:5-10
3. Wu, Y. Stem Cells. 2007;25:2648-2659
4. Wu, K.H. Ann Thorac Surg. 2011;92:1917-1925

dHACM REGENERATIVE THERAPY: RECRUITMENT OF STEM CELLS IN VIVO



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JOURNAL OF SURGICAL RESEARCH XXX (2014) x–xx

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Cell recruitment by amnion chorion grafts promotes neovascularization

Zeshaan N. Maan, MBBS, MS, MRCS,[a,1] Robert C. Rennert, BA,[a,1] Thomas J. Koob, PhD,[b] Michael Januszyk, MD,[a] William W. Li, MD,[c] and Geoffrey C. Gurtner, MD[a,*]

[a] Division of Plastic and Reconstructive Surgery, Department of Surgery, Stanford University School of Medicine, Stanford, California
[b] MiMedx Group, Inc., Marietta, Georgia
[c] Angiogenesis Foundation, Cambridge, Massachusetts

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dHACM
Neovascularization
Chronic wounds
Progenitor cell recruitment
SDF-1
Hematopoietic progenitor cell

ABSTRACT

Background: Nonhealing wounds are a significant health burden. Stem and progenitor cells can accelerate wound repair and regeneration. Human amniotic membrane has demonstrated efficacy in promoting wound healing, though the underlying mechanisms remain unknown. A dehydrated human amnion chorion membrane (dHACM) was tested for its ability to recruit hematopoietic progenitor cells to a surgically implanted graft in a murine model of cutaneous ischemia.

Methods: dHACM was subcutaneously implanted under elevated skin (ischemic stimulus) in either wild-type mice or mice surgically parabiosed to green fluorescent protein (GFP) + reporter mice. A control acellular dermal matrix, elevated skin without an implant, and normal unwounded skin were used as controls. Wound tissue was harvested and processed for histology and flow cytometric analysis.

Results: Implanted dHACMs recruited significantly more progenitor cells compared with controls ($^{*}P < 0.05$) and displayed *in vivo* SDF-1 expression with incorporation of CD34 + progenitor cells within the matrix. Parabiosis modeling confirmed the circulatory origin of recruited cells, which coexpressed progenitor cell markers and were localized to foci of neovascularization within implanted matrices.

Conclusions: In summary, dHACM effectively recruits circulating progenitor cells, likely because of stromal derived factor 1 (SDF-1) expression. The recruited cells express markers of "stemness" and localize to sites of neovascularization, providing a partial mechanism for the clinical efficacy of human amniotic membrane in the treatment of chronic wounds.

1. Background

Normal wound healing is a complex biological process that progresses through three overlapping phases as follows: inflammation, proliferation, and remodeling [1]. This process entails a well-coordinated interplay between numerous cell types regulated by extracellular matrix interactions and cytokine expression resulting in neovascularization, stromal

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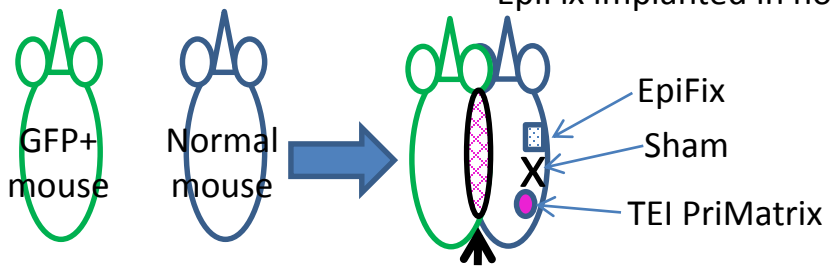
E-mail address: ggurtner@stanford.edu (G.C. Gurtner).
[1] These authors contributed equally to this work.

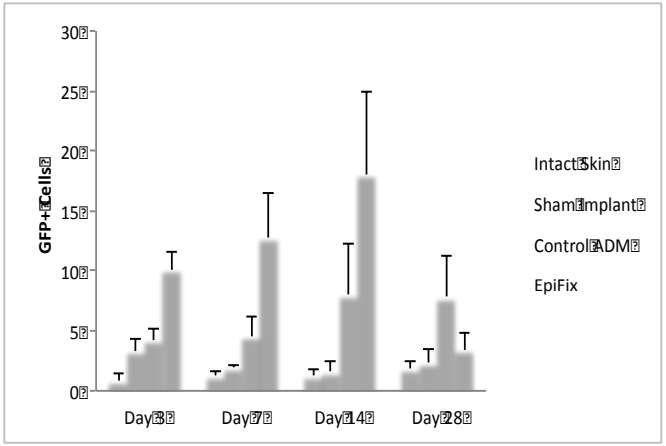
0022-4804/$ – see front matter © 2014 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jss.2014.08.045

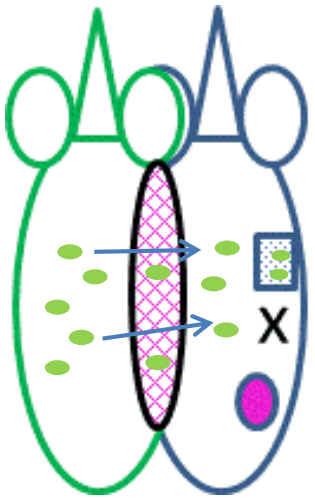
EpiFix implanted in normal mouse



BM-MSCs in GFP mouse fluoresce green

Surgically join skin so mice share blood circulation- "parabiosis"





PURION Processed Allografts Recruit Circulating Mesenchymal Stem Cells *In Vivo*

Maan ZN, Rennert RC, Koob TJ, Januszyk M, Li WW, Gurtner GC. Cell recruitment by amnion chorion grafts promotes neovascularization. J Surg Res. 2015 Feb; 193(2):953-62.

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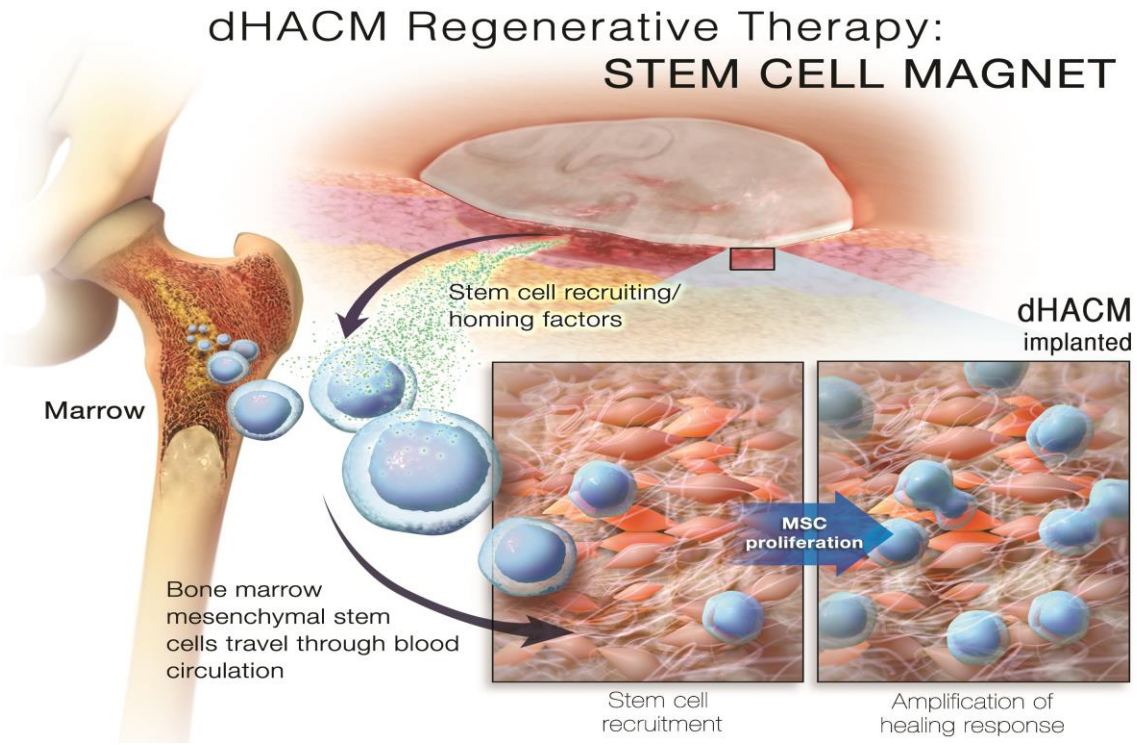
dHACM REGENERATIVE THERAPY: STEM CELL MAGNET



dHACM recruits the patient's own mesenchymal stem cells

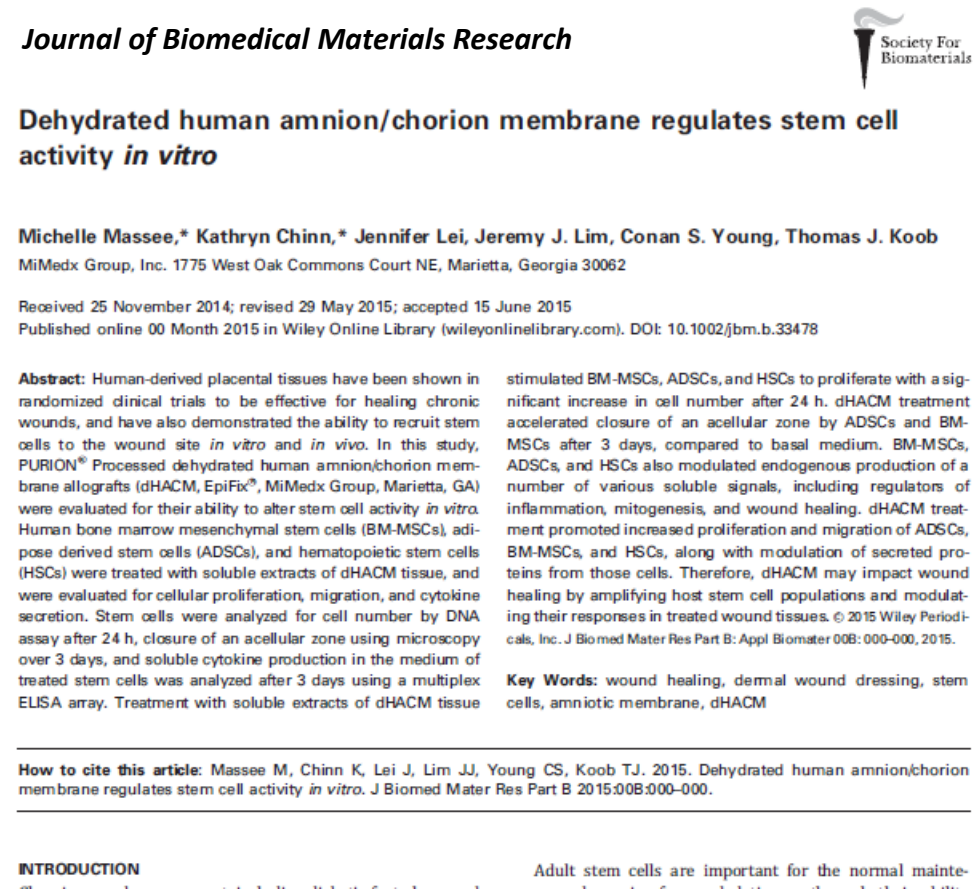
→ **No need for live cell therapies**

Koob, T; Rennert, R; Zabek, N; Massee, J; Lim, J; Temenoff, J; Li, W; and Gurtner, G. "Biological properties of dehydrated human amnion/chorion composite graft; implications for chronic wound healing." *International Wound Journal* (10)5: 2013, pp. 493-500.

Maan ZN, Rennert RC, Koob TJ, Januszyk M, Li WW, Gurtner GC, "Cell Recruitment by Amnion Chorion Grafts Promotes Neovascularization, *Journal of Surgical Research* (2014), doi: 10.1016/j.jss.2014.08.045.

MiMedx

dHACM ALLOGRAFT REGULATES STEM CELL BIOACTIVITY[1]



Journal of Biomedical Materials Research

Society For Biomaterials

Dehydrated human amnion/chorion membrane regulates stem cell activity *in vitro*

Michelle Massee,* Kathryn Chinn,* Jennifer Lei, Jeremy J. Lim, Conan S. Young, Thomas J. Koob
MiMedx Group, Inc. 1775 West Oak Commons Court NE, Marietta, Georgia 30062

Received 25 November 2014; revised 29 May 2015; accepted 15 June 2015
Published online 00 Month 2015 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/jbm.b.33478

Abstract: Human-derived placental tissues have been shown in randomized clinical trials to be effective for healing chronic wounds, and have also demonstrated the ability to recruit stem cells to the wound site *in vitro* and *in vivo*. In this study, PURION® Processed dehydrated human amnion/chorion membrane allografts (dHACM, EpiFix®, MiMedx Group, Marietta, GA) were evaluated for their ability to alter stem cell activity *in vitro*. Human bone marrow mesenchymal stem cells (BM-MSCs), adipose derived stem cells (ADSCs), and hematopoietic stem cells (HSCs) were treated with soluble extracts of dHACM tissue, and were evaluated for cellular proliferation, migration, and cytokine secretion. Stem cells were analyzed for cell number by DNA assay after 24 h, closure of an acellular zone using microscopy over 3 days, and soluble cytokine production in the medium of treated stem cells was analyzed after 3 days using a multiplex ELISA array. Treatment with soluble extracts of dHACM tissue stimulated BM-MSCs, ADSCs, and HSCs to proliferate with a significant increase in cell number after 24 h. dHACM treatment accelerated closure of an acellular zone by ADSCs and BM-MSCs after 3 days, compared to basal medium. BM-MSCs, ADSCs, and HSCs also modulated endogenous production of a number of various soluble signals, including regulators of inflammation, mitogenesis, and wound healing. dHACM treatment promoted increased proliferation and migration of ADSCs, BM-MSCs, and HSCs, along with modulation of secreted proteins from those cells. Therefore, dHACM may impact wound healing by amplifying host stem cell populations and modulating their responses in treated wound tissues. © 2015 Wiley Periodicals, Inc. J Biomed Mater Res Part B: Appl Biomater 00B: 000-000, 2015.

Key Words: wound healing, dermal wound dressing, stem cells, amniotic membrane, dHACM

How to cite this article: Massee M, Chinn K, Lei J, Lim JJ, Young CS, Koob TJ. 2015. Dehydrated human amnion/chorion membrane regulates stem cell activity *in vitro*. J Biomed Mater Res Part B 2015:00B:000–000.

INTRODUCTION

Adult stem cells are important for the normal mainte-

- Mesenchymal Stem Cells (MSCs)
- Adipose Derived Stem Cells (ADSCs)
- Hematopoietic Stem Cells (HSCs)

Results

- ✓ Proliferation
- ✓ Migration
- ✓ Growth factor production
- ✓ Cytokine upregulation
- ✓ Chemokine upregulation

See poster in the display room for details

[1]Massee M, Chinn K, Lei J, Lim JJ, Young CS, Koob TJ. 2015. Dehydrated human amnion/chorion membrane regulates stem cell activity *in vitro*. J Biomed Mater Res Part B2015:00B:000–000.

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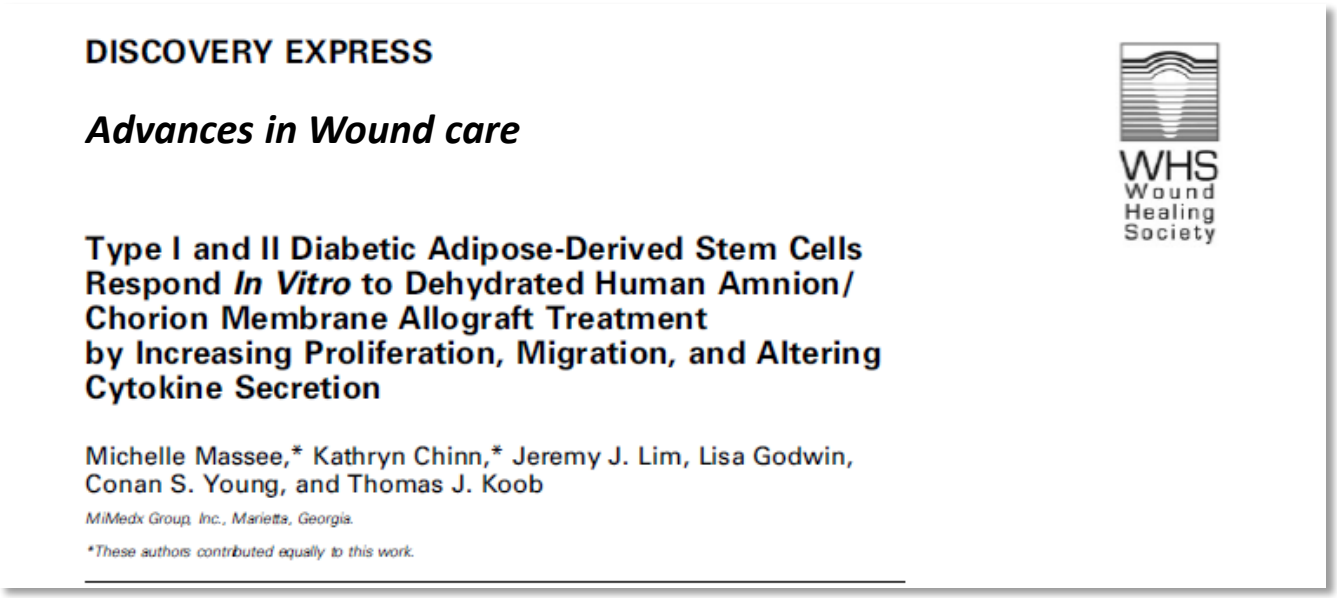
dHACM ALLOGRAFT STIMULATES DIABETIC STEM CELLS[1]

Adipose derived stem cells from Type I and Type II diabetic patients



DISCOVERY EXPRESS

Advances in Wound care

WHS Wound Healing Society

Type I and II Diabetic Adipose-Derived Stem Cells Respond *In Vitro* to Dehydrated Human Amnion/ Chorion Membrane Allograft Treatment by Increasing Proliferation, Migration, and Altering Cytokine Secretion

Michelle Massee,* Kathryn Chinn,* Jeremy J. Lim, Lisa Godwin, Conan S. Young, and Thomas J. Koob

MiMedx Group, Inc., Marietta, Georgia.

**These authors contributed equally to this work.*

Results

- ✓ Proliferation
- ✓ Migration
- ✓ Upregulates:
  - growth factor
  - cytokine
  - chemokine
  - biosynthesis
- ✓ Gene regulation

See poster in the display room for details

[1]Massee Michelle, Chinn Kathryn, Lim Jeremy J., Godwin Lisa, Young Conan S., and Koob Thomas J.. Advances in Wound Care. ahead of print. doi:10.1089/wound.2015.0661.

MiMedx®

Amniotic Fluid
OrthoFlo

FUNCTIONS OF AMNIOTIC FLUID

- Amniotic fluid contains:
  - Nutrients that facilitate fetal growth
  - Carbohydrates, proteins, lipids, electrolytes & water
  - Hyaluronic acid (HA), a principle component of viscosity and lubrication in synovial fluid
  - Antimicrobial effectors
  - Growth factors
- Dynamically changing biological fluid that changes in both volume and composition throughout the course of gestation
- *In utero*, amniotic fluid protects & provides mechanical cushioning, allowing fetal movement and growth

ORTHOFLO

- OrthoFlo is a Purified Human Amniotic Fluid
- No contaminating tissue fragments
- Contains hyaluronic acid (HA), a well known component of synovial fluid
  - HA cushions and lubricates synovial joints
- Contains essential growth factors involved in fetal development and amniotic fluid homeostasis

REGULATING FACTORS IN AMNIOTIC FLUID

OrthoFlo contains an array of well-known regulating proteins, growth factors, cytokines and chemokines naturally present in amniotic fluid, including:

A partial list of regulatory proteins, cytokines and chemokines in OrthoFlo			
Acronym	***Name***	***Acronym***	***Name***
BDNF	Brain-derived neurotrophic factor	**IGFBP-6**	Insulin-like growth factor binding protein-6
bFGF	Basic fibroblast growth factor	**IL-1ra**	Interleukin-1 receptor antagonist
CCL28	Chemokine (C-C motif) ligand 28	**IL-6**	Interleukin-6
CXCL16	Chemokine (C-X-C motif) ligand 16	**IL-8**	Interleukin-8
EGF	Epidermal growth factor	**MCP-1**	Monocyte chemotactic protein-1
EG-VEGF	Endocrine gland-derived vascular endothelial growth factor	**MCSF**	Macrophage colony-stimulating factor
Eotaxin	Eotaxin	**MIF**	Macrophage inhibitory factor
Eotaxin-2	Eotaxin-2	**OPG**	Osteoprotegerin
GDF-15	Growth differentiation factor 15	**OPN**	Osteopontin
HCC-1	Chemokine (C-C motif) ligand 14	**PARC**	Pulmonary and activation-regulated chemokine
HGF	Hepatocyte growth factor	**PDGF-AA**	Platelet-derived growth factor-AA
I-309	I-309 (a CC chemokine)	**PF4**	Platelet factor 4
IGFBP-1	Insulin-like growth factor binding protein-1	**TGF-α**	Transforming growth factor alpha
IGFBP-2	Insulin-like growth factor binding protein-2	**TGF-β1**	Transforming growth factor beta 1
IGFBP-3	Insulin-like growth factor binding protein-3	**TIMP-1**	Tissue inhibitor of metalloproteinase-1
IGFBP-4	Insulin-like growth factor binding protein-4	**TIMP-2**	Tissue inhibitor of metalloproteinase-2

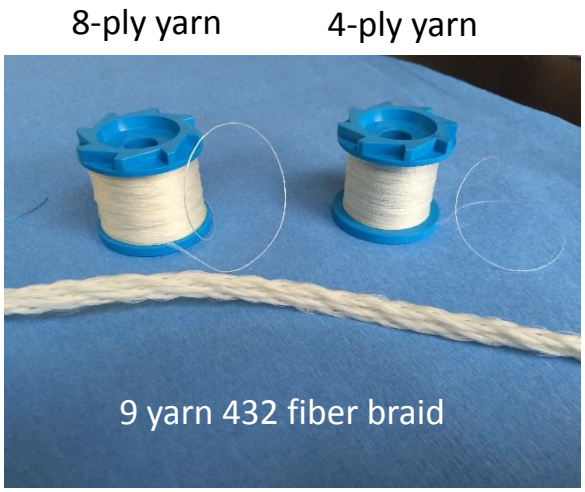
CollaFix

COLLAFIX

Biomechanical induction of tendon regeneration

Mimics the natural mechanical properties of tendon
Thereby inducing reparative cells to make normal tendon tissue without scar

- **Human placental collagen – wet spun fiber technology**
- **Fiber – stronger than tendon and ligament fibers**
- **Yarn – number of fibers adjustable and braided**
- **Braid - built to match specific tendon properties**
- **Scalable – to match the size and strength of any tendon or ligament**



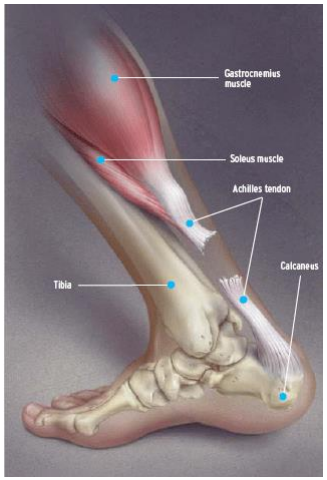
MiMedx

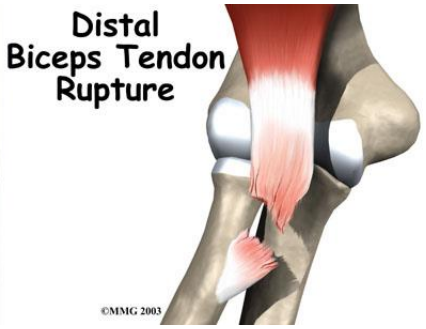
PRODUCTS AND SURGICAL APPLICATIONS

CollaFix™

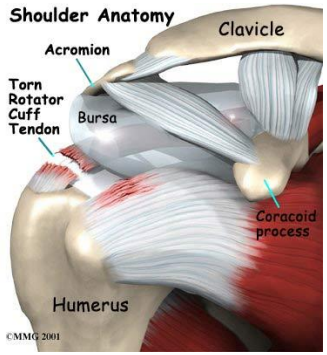
- **Tendon repair** – CollaFix Braid
  - Achilles
  - Biceps
  - Patellar
  - Foot and Ankle
- **Rotator cuff** – CollaFix Ribbon
- **Ligaments** - Flat braids
  - Collateral
  - ACL
- **Ligaments** – BioStaples
- **Bone fracture repair** – BioRivets

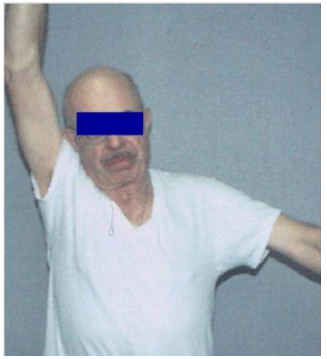
Achilles Tendon Rupture





Rotator Cuff Injury





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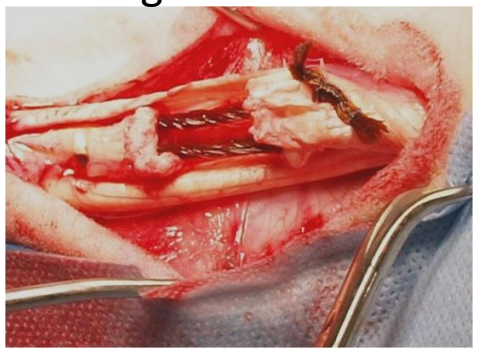
COLLAFIX PRE-CLINICAL STUDIES

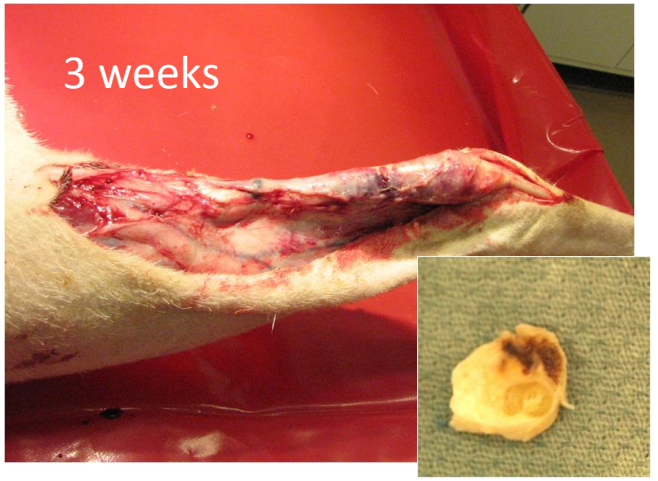
Sheep Gapped Achilles Tendon

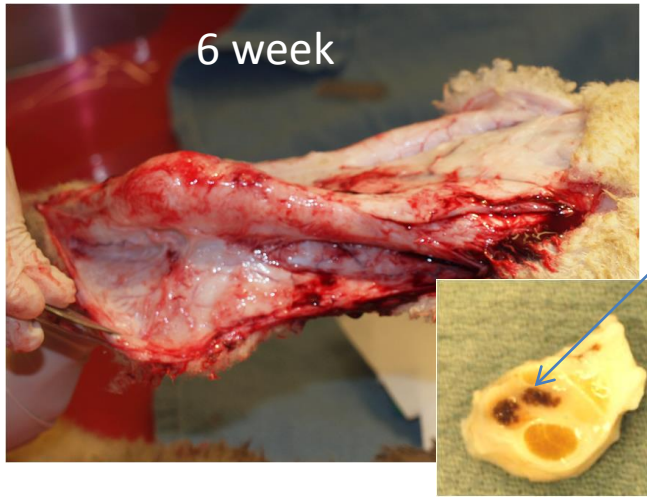
1cm gap bridged with BioBraid repair.
3, 6 and 12 week time-points for visual and histological examination.



1 cm gap technique

Cast for 3 weeks





BioBraid

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COLLAFIX PRE-CLINICAL STUDIES

Sheep Gapped Achilles Tendon

MiMedx

Competitive Analysis

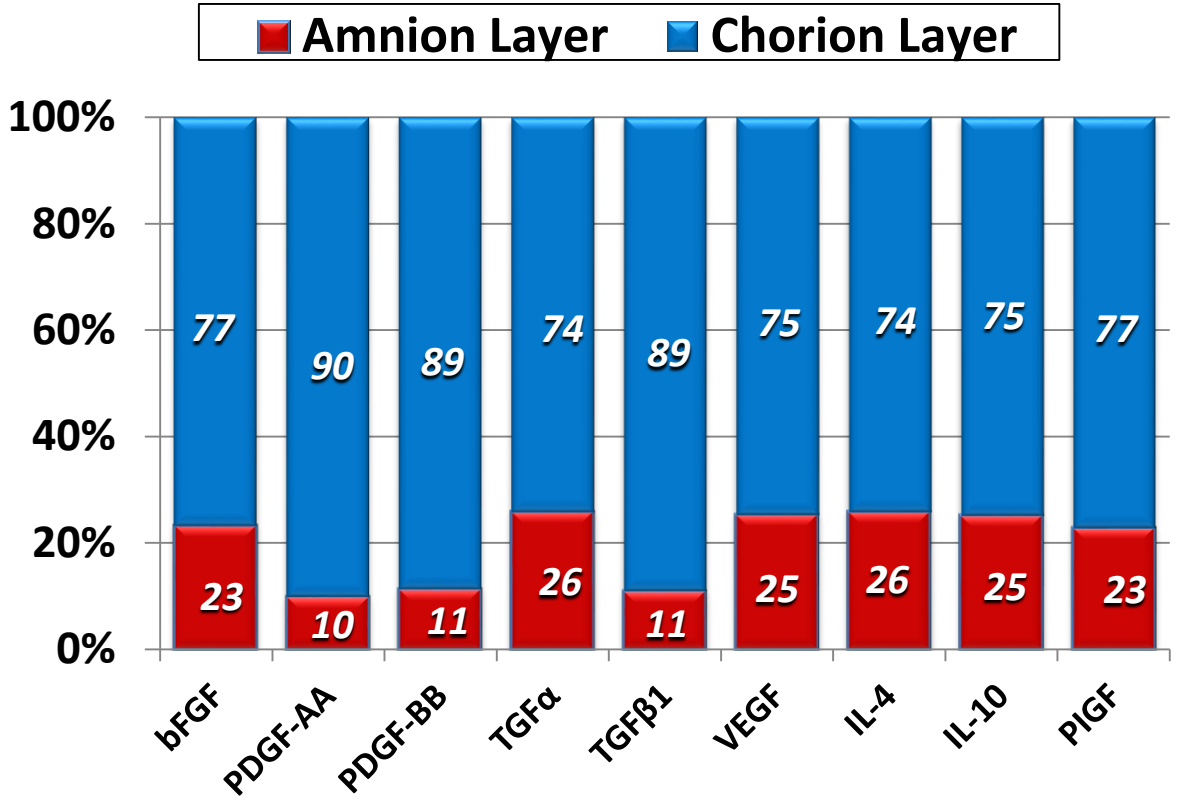
Conan Young, Ph.D.

Director of Research

NOT ALL AMNIOTIC MEMBRANE PRODUCTS ARE PROCESSED EQUALLY

dHACM is a bilayer graft containing both amnion and chorion

Chorion accounts for 74-90% of growth factors in bilayer graft



Koob TJ, Lim JJ, Zabek N, Massee M. "Cytokines in single layer amnion allografts compared to multilayer amnion/chorion allografts for wound healing." Journal of Biomedical Materials Research – Part B: Applied Biomaterials. 2014; doi: 10.1002/jbm.b.33265.

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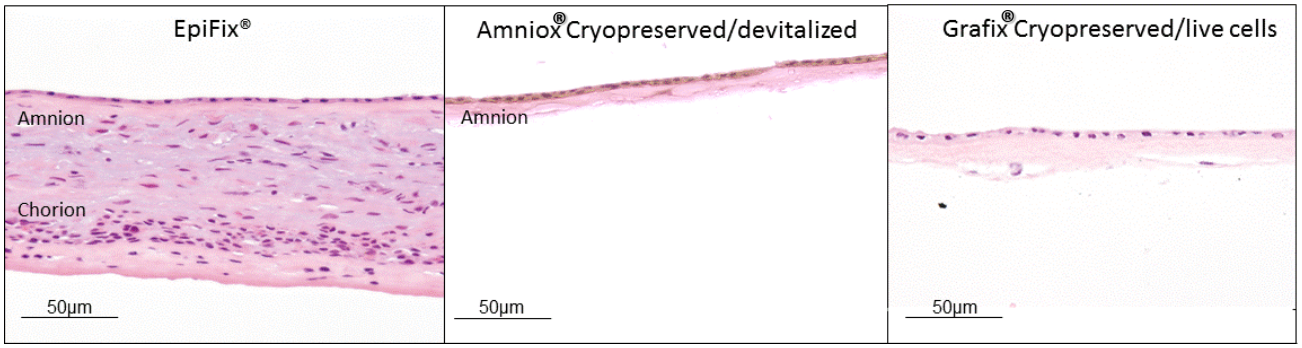
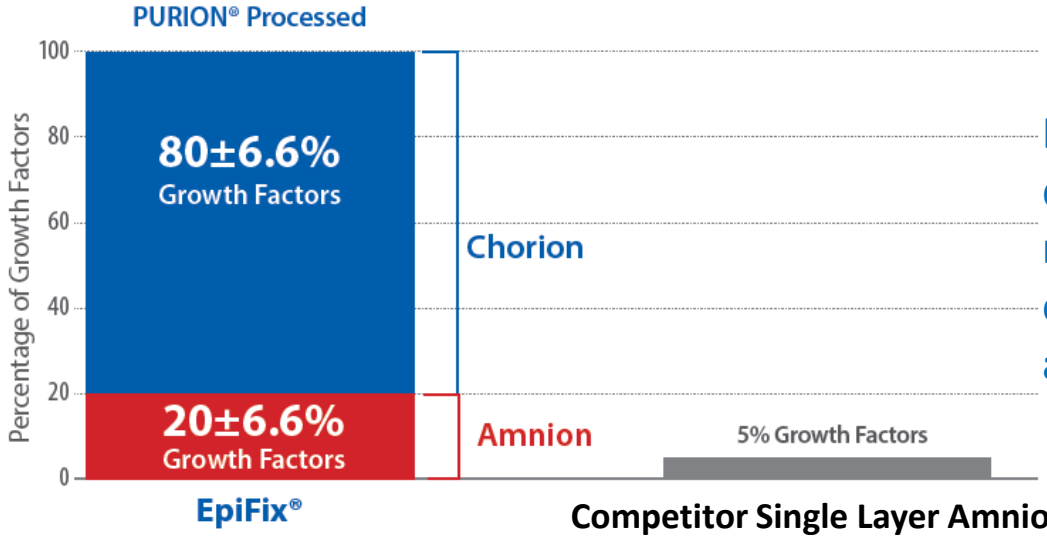
NOT ALL AMNIOTIC MEMBRANE PRODUCTS ARE PROCESSED EQUALLY



Growth Factor Content in EpiFix® vs. Competitive Single Layer Grafts



PURION® processed dHACM contains 20 times more growth factors than competitor single layer amnion products

Koob TJ, Lim JJ, Zabek N, Massee M. "Cytokines in single layer amnion allografts compared to multilayer amnion/chorion allografts for wound healing." Journal of Biomedical Materials Research – Part B: Applied Biomaterials. 2014; doi: 10.1002/jbm.b.33265.

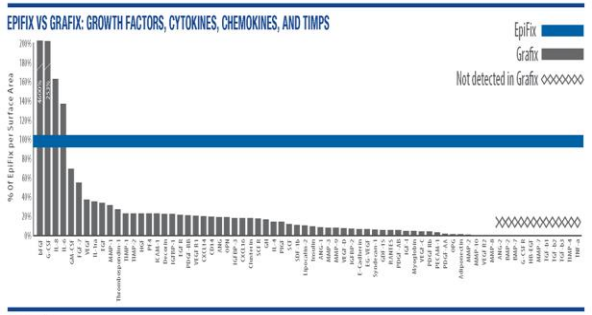
MiMedx®

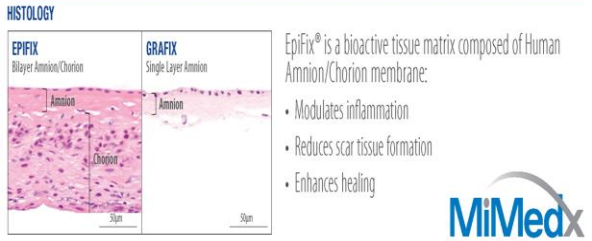
EPIFIX COMPETITIVE ANALYSIS

Processing Matters

EPIFIX® > GRAFIX®

66 OUT OF 70 FACTORS IMPORTANT FOR SOFT TISSUE REPAIR ARE HIGHER IN **EPIFIX** THAN IN **GRAFIX**





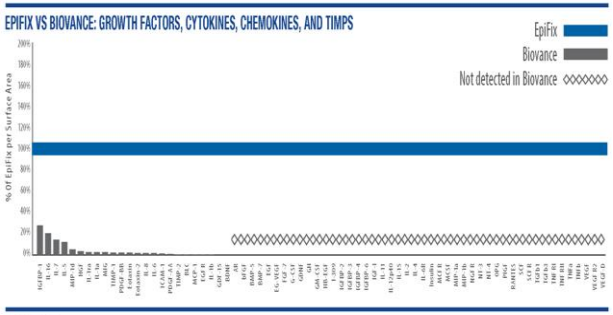
EpiFix® is a bioactive tissue matrix composed of Human Amnion/Chorion membrane:

- Modulates inflammation
- Reduces scar tissue formation
- Enhances healing

MiMedx

EPIFIX® > BIOVANCE®

70 OUT OF 70 FACTORS IMPORTANT FOR SOFT TISSUE REPAIR ARE HIGHER IN **EPIFIX** THAN IN **BIOVANCE**



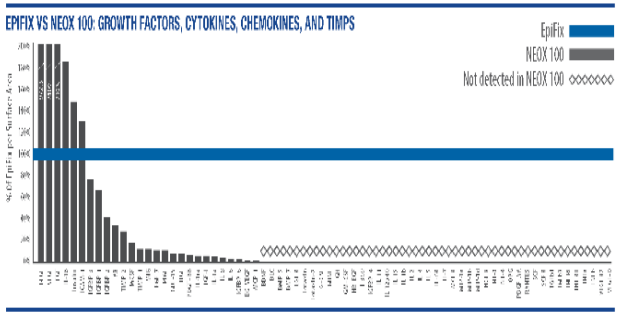
EpiFix® is a bioactive tissue matrix composed of Human Amnion/Chorion membrane:

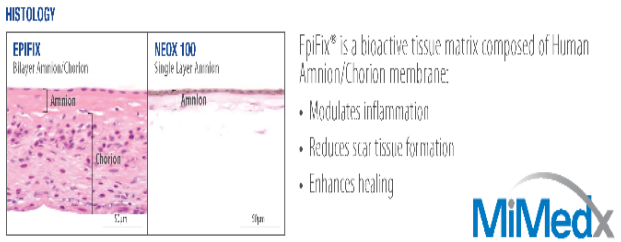
- Modulates inflammation
- Reduces scar tissue formation
- Enhances healing

MiMedx

EPIFIX® > NEOX 100®

64 OUT OF 70 FACTORS IMPORTANT FOR SOFT TISSUE REPAIR ARE HIGHER IN **EPIFIX** THAN IN **NEOX 100**





EpiFix® is a bioactive tissue matrix composed of Human Amnion/Chorion membrane:

- Modulates inflammation
- Reduces scar tissue formation
- Enhances healing

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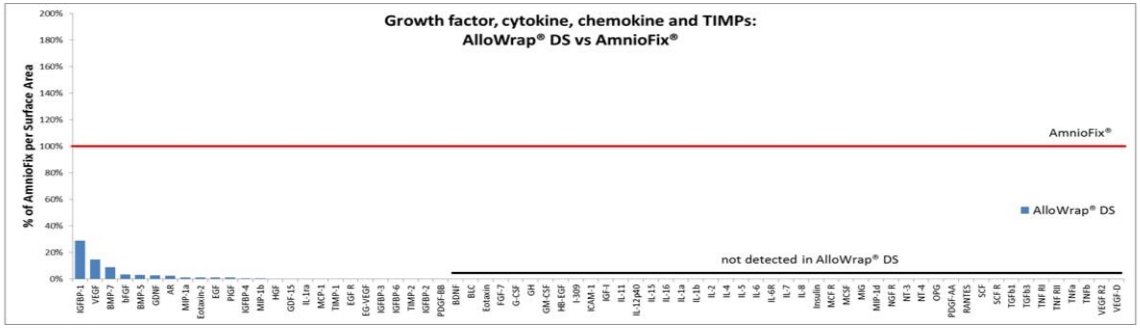
See poster in display room for full analyses of four competitive products

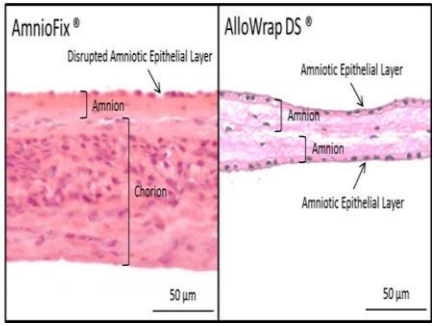
MiMedx®

AMNIOFIX COMPETITIVE ANALYSIS

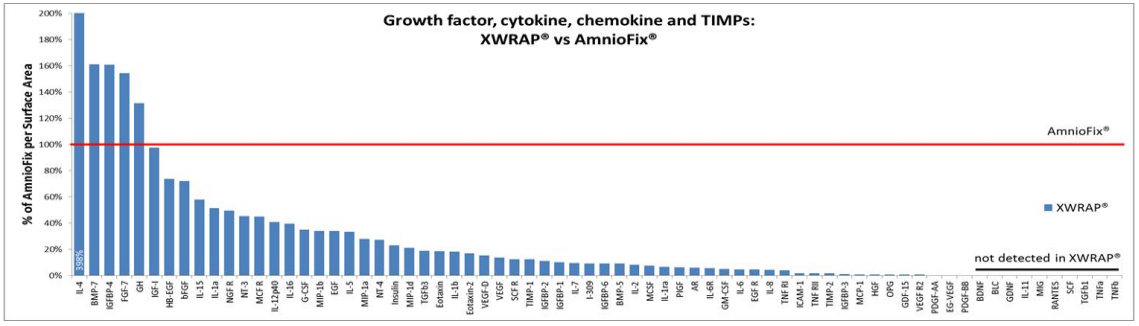
Processing Matters

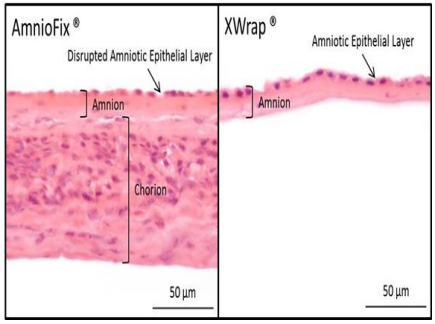
AMNIOFIX®> ALLOWRAP® DS



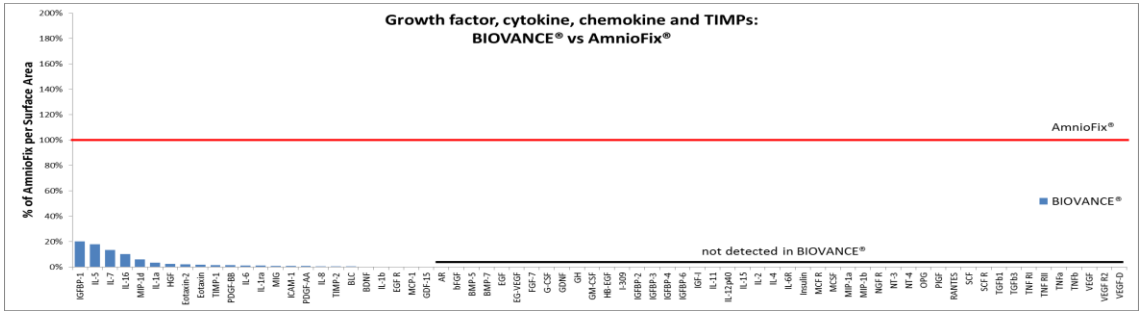


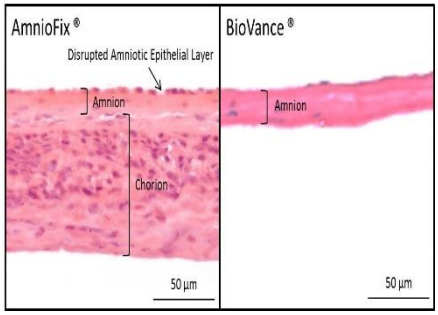
AMNIOFIX®> XWRAP®





AMNIOFIX®> BIOVANCE®





See poster in display room for full analyses of four competitive products

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ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

Clinical

Donald Fetterolf, MD, MBA, FACP

Chief Medical Officer

PRESENTATION OUTLINE

- **Medical Department Staff**
  - The people, the purpose and the philosophy
- **Clinical Research: Evidence Based Literature for the Industry**
  - Clinical Study Summary
  - Wounds: Diabetic Foot Ulcers – “DFUs”, Venous Leg Ulcers – “VLUs”
  - Surgical Studies and Studies Not Involving Wounds
- **Clinical Publications**
  - Evidence Based Literature for the Industry
- **Clinical Application: Cases and Case Series**
  - Multiple examples of various applications
  - Mohs, burns, pressure ulcers, burns, orthopedic, urology, plastics, other
- **Summary**

Clinical Management Staff

CLINICAL DEPARTMENT STAFF

Clinical Staff – Physicians

- Don Fetterolf, MD, MBA - Chief Medical Officer**
- David Mason, MD – Vice President, Medical Affairs**

- Chris Clare, MD – Neurosurgical Medical Director*
- Paul Davis, MD, MBA – Orthopedic Medical Director*
- Jeff Frenchman, DPM – Podiatric Medical Director*
- Matthew Garoufalis, DPM – Podiatric Medical Director*

Clinical Staff – Support

- ***Contracted consultants*** in biostatistics and clinical consultants in General Surgery, Orthopedics, Podiatry, Plastic Surgery, Urology, Wound Medicine and other medical specialties
- ***Clinical support staff*** includes two Vice Presidents in the research area, and a staff of 5 additional support staff and three part time medical writers

**** Full time. * Part time.**

MiMedx

Clinical Research:
Supplying Evidence Based Literature for the Industry

MiMedx

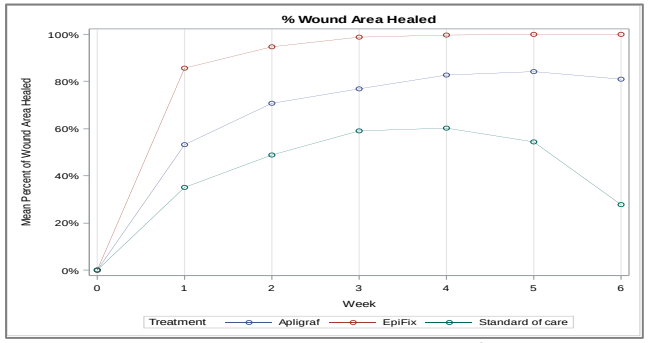
MIMEDX CLINICAL DFU/VLU AND OVERALL RESEARCH -- OCT 1, 2015

	DFU		VLU		Other	
Clinical Studies Completed / # Active Sites	7	9	1	8	3	3
Clinical Studies, In Process / # Active Sites	1	18	1	8	5	16
Randomized Controlled Trials Total/Multicenter	4	3	2	2	5	2
Total Patients, Completed Studies to Date	**200**		**93**		**110**	
Total Sites Involved in Completed Studies	4		8		3	
Total Investigators in Completed Studies	5		12		3	
Total Investigators Currently Engaged	18		12		16	
Publications Published / # Currently in Review	6	0	1	1	3	0

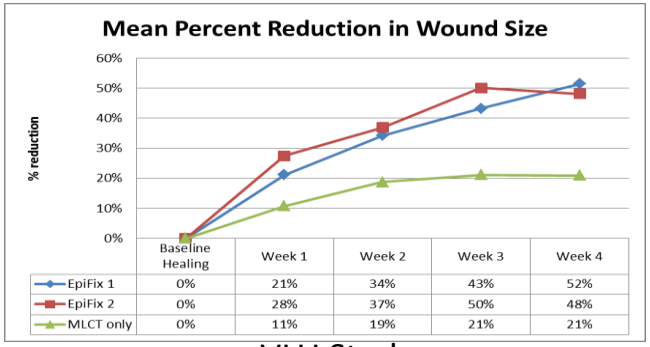
Total Patients Across All Clinical Studies = 550, with ~100 investigators, across 48 sites. This has resulted in some 25 publications done by MiMedx; with over 50 publications total with dHACM and a total of over 100 scientific session posters.

Efficacy Results

- Significantly exceeds standard of care.
- Exceeds competitor results.
- More cost effective.
  - ✓ Less expensive
  - ✓ Less waste
  - ✓ Easier handling



DFU Comparative Study



VLU Study

CLINICAL RESEARCH COMPLETED

- **Wound**
  - *DFU: EpiFix treatment vs standard of care**
  - *DFU: EpiFix treatment crossover study**
  - *DFU: Long term follow up**
  - *DFU: Weekly vs biweekly application***
  - *DFU: Comparative effectiveness EpiFix vs Apligraf***
  - *VLU: Multicenter EpiFix vs standard of care***
- **Surgical**
  - *AmnioFix in surgical spine instrument replacement*
  - *AmnioFix in robot assisted prostate surgery*
- **Micronized**
  - *Plantar fasciitis AmnioFix vs saline placebo**

***** = RCT and Multicenter**
*** = RCT**

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CLINICAL RESEARCH ONGOING

- **Wound**
  - Multicenter DFU clinical trial**
  - Multicenter VLU clinical trial**
  - EpiFix Mesh product proof of concept
  - Burn studies with EpiBurn (2 in IRB phase)**
- **Surgical**
  - Prostate surgery prospective clinical trial*
  - Prostate surgery prospective clinical trial (#2, in IRB phase)*
  - Craniotomy multicenter randomized clinical trial**
  - Spine surgery prospective clinical trial with AmnioFix*
  - Foot and ankle reconstruction study**
- **Micronized**
  - Plantar fasciitis FDA IND multicenter trial**
- **International**
  - Canadian EpiFix clinical trial
  - European Swiss EpiFix clinical review
- **Multiple ongoing proposals in process, 10-20 at any given time**

***** = RCT and Multicenter***

*** = RCT***

MiMedx

CLINICAL RESEARCH EXCELLENCE

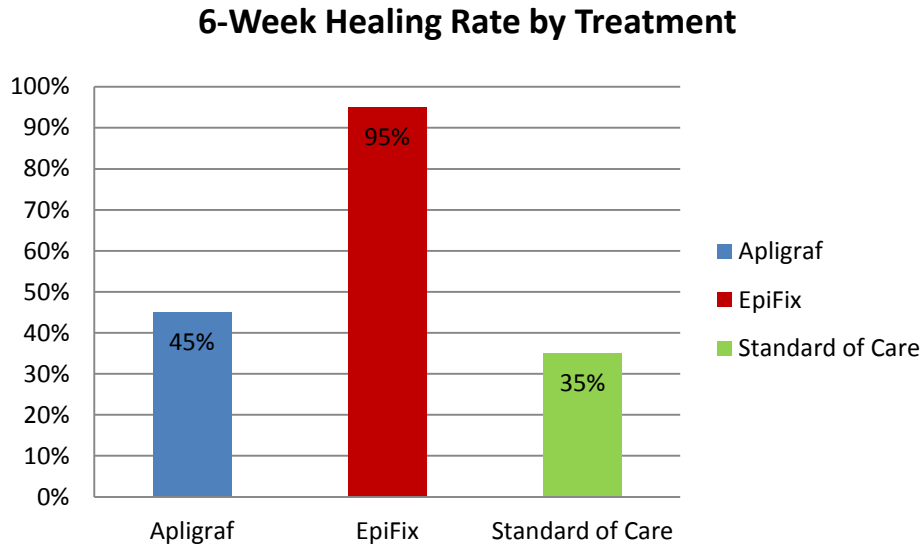
- KOL input and consulting on clinical trial design and execution
- Multicenter trials
- Clinical trial automation system
  - Integrated informatics
  - Advanced analytics
  - Extensive policy/procedures
- Remote clinical trial monitoring
  - Site cameras with central data aggregation/monitoring

Diabetic Foot Ulcers “DFU”s

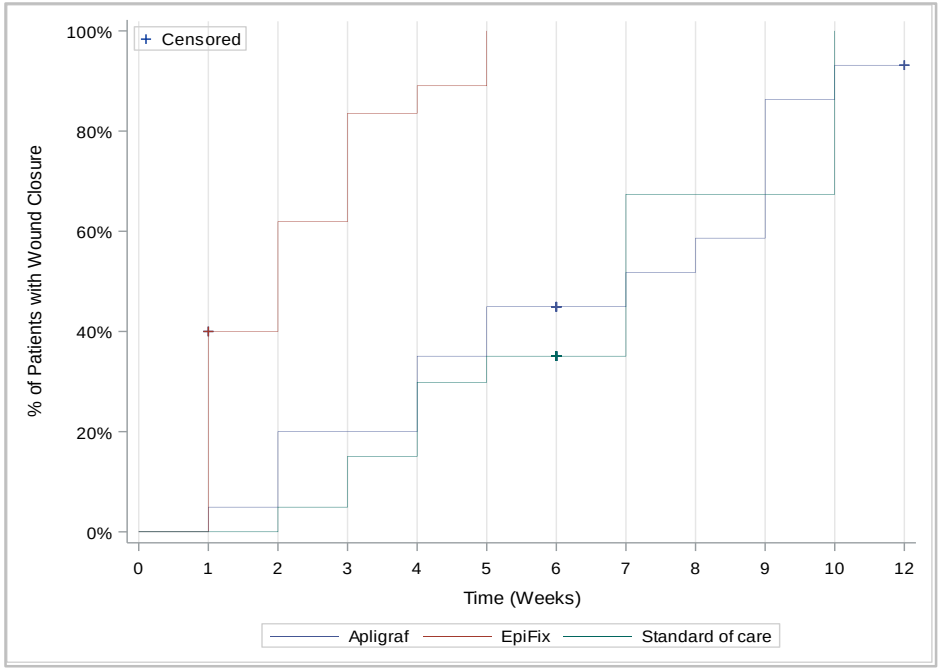
DIABETIC FOOT ULCER EPIFIX TRIALS

- **EpiFix®/SOC vs. SOC Alone**
  - 92% healed in 6 weeks compared to 8% for control, with consistent healing kinetics
  - 4 and 6 week healing statistically significant p=0.001
  - Average of *2.5* grafts to closure
- **Crossover of Patients from Control also healed**
- **Long term follow up**
  - 9-12 months follow-up
  - *94.4% patients remained fully healed*
- **Weekly application** is superior to biweekly
  - 92.5% healed within the 12 week study period.
  - Mean time to healing was 4.1 wks for biweekly vs. 2.4 weeks for weekly application; Number of grafts needed to heal in each case was 2.3-2.4 grafts

COMPARATIVE EFFECTIVENESS: EFFICACY



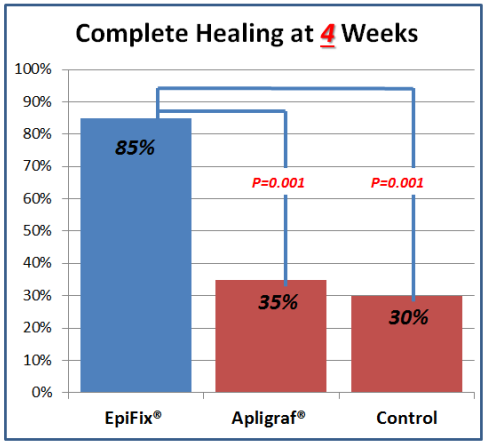
	Apligraf	EpiFix®	Standard of Care	*p*-value
Completely healed by week 6	9/20 (45%)	19/20 (95%)	7/20 (35%)	.0002

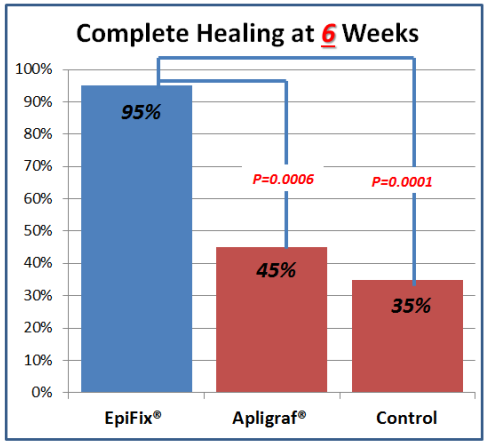


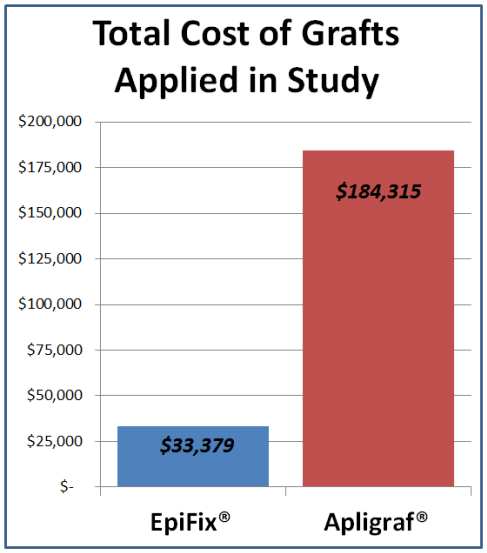
In this randomized, controlled clinical trial, EpiFix was demonstrated to be more effective than both standard of care and *Apligraf*, a leading industry competitor.

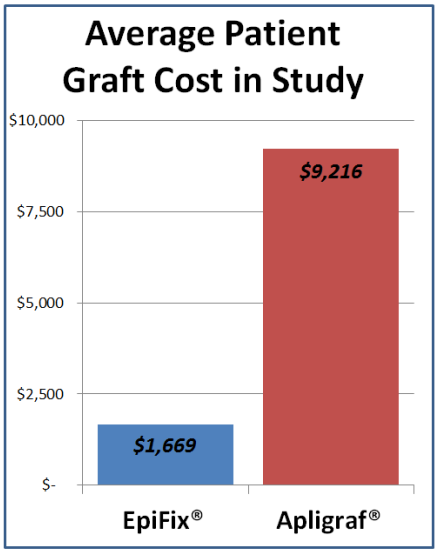
Zelen, C; Gould, L; Serena, T; Carter, M; Keller, J; Li, W "A prospective, randomised, controlled, multi-centre comparative effectiveness study of healing using dehydrated human amnion/chorion membrane allograft, bioengineered skin substitute or standard of care for treatment of chronic lower extremity diabetic ulcers." Int Wound J. 2014 Nov 26. doi: 10.1111/iwj.12395. [Epub ahead of print]

COMPARATIVE EFFECTIVENESS: EFFICACY









HEALING RATES

- Complete healing at week 4:
  - EpiFix® 85%
  - Apligraf® 35%
  - Standard of Care 30%

Complete healing at week 6:

- EpiFix® 95%
- Apligraf® 45%
- Standard of Care 35%

COST EFFECTIVENESS

- Total Costs Lower with EpiFix
  - Average Patient Costs Lower with EpiFix
- **Superiority of EpiFix® over both Apligraf® and Standard Care for complete healing**

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Venous Leg Ulcers “VLU”s

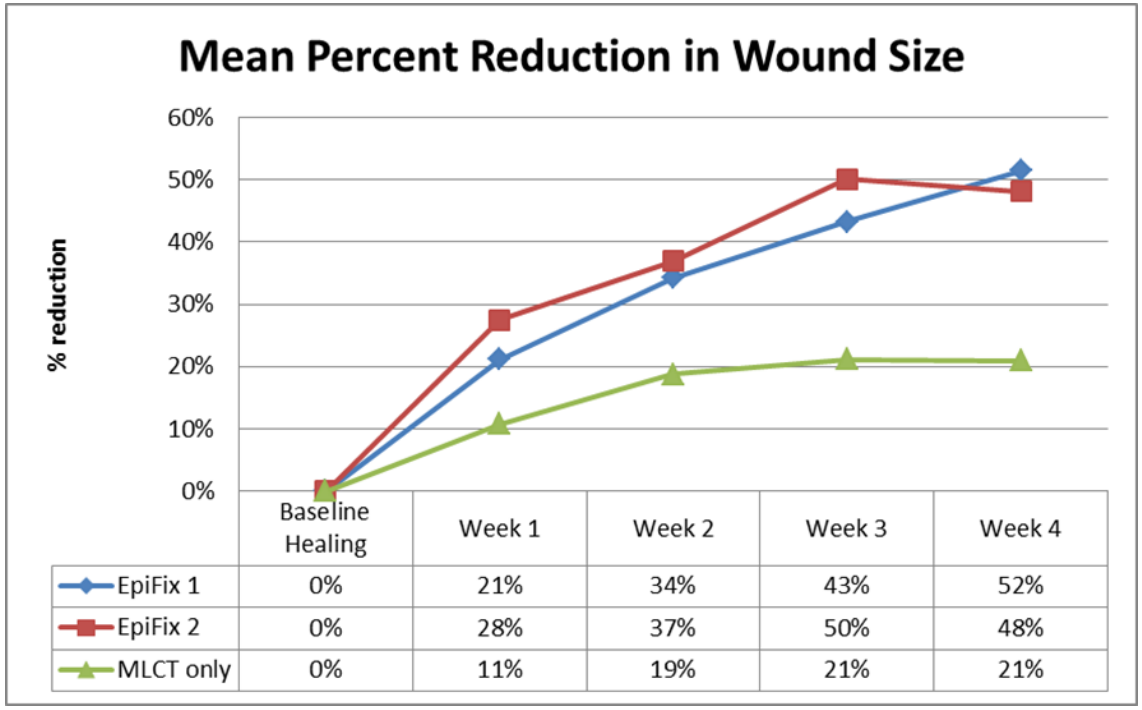
MULTI-SITE RCT FOR VLU WOUND SIZE REDUCTION1,2

Study completed across 8 centers indicated that both one application and two applications are more effective than SOC.

Mean percent reduction in wound size during the 4 week study period.

Publications on results, long term follow up and NNT analyses.

Small numbers and short time period do not permit differentiation seen with DFU multiple dose schedule.



	Baseline Healing	Week 1	Week 2	Week 3	Week 4
EpiFix 1	0%	21%	34%	43%	52%
EpiFix 2	0%	28%	37%	50%	48%
MLCT only	0%	11%	19%	21%	21%

Serena TE, Carter MJ, Le LT, Sabo MJ, DiMarco DT, and the EpiFix Study group. "A Multi-center Randomized Controlled Clinical Trial Evaluating the Use of Dehydrated Human Amnion/Chorion Membrane Allografts and Multi-layer Compression Therapy vs. Multi-layer Compression Therapy Alone in the Treatment of Venous Leg Ulcers." Wound Repair Regen. (22)6. November-December 2014. pp 688-693.

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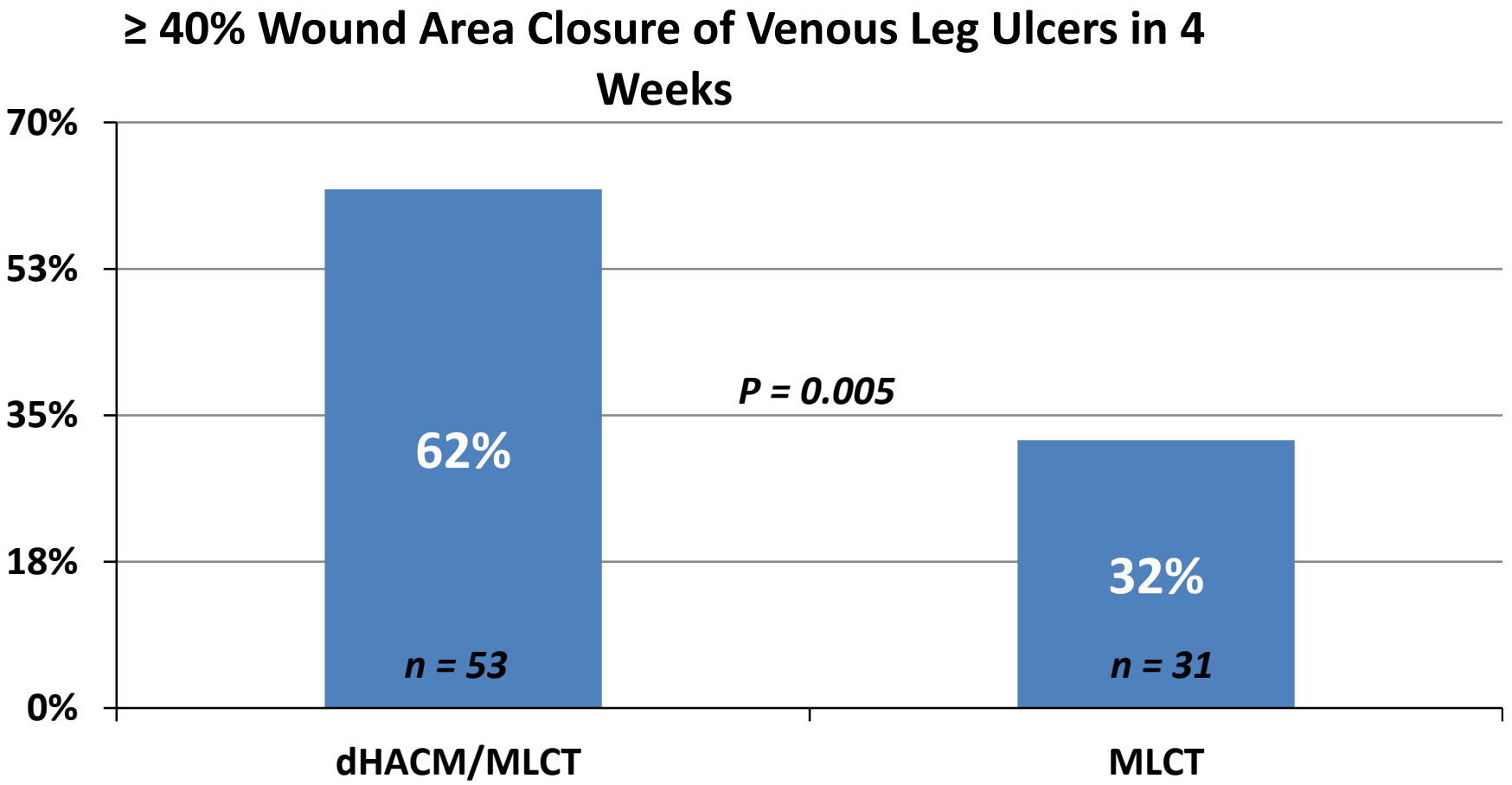
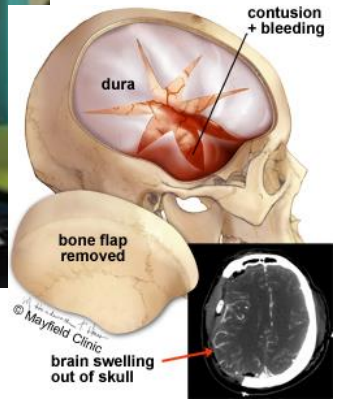
MULTI-CENTER, RANDOMIZED, CONTROLLED, VENOUS LEG ULCER TRIAL *(N = 84)*



Serena TE, Carter MJ, Le TL, Sabo MJ, DiMarco DT. "A Multi-center Randomized Controlled Clinical Trial Evaluating the Use of Dehydrated Human Amnion/Chorion Membrane Allografts and Multi-layer Compression Therapy vs. Multi-layer Compression Therapy Alone in the Treatment of Venous Leg Ulcers." Wound Repair and Regeneration. 2014 Sept 15. doi: 10.1111/wrr.12227 (epub).

Surgical Clinical Studies

SURGICAL TRIALS AMNIOFIX APPLICATIONS



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AMNIOFIX CLINICAL TRIALS NOT INVOLVING WOUNDS

- AmnioFix® in Spine surgery – Dr. Subach/VSI **
- AmnioFix® in Spine Surgery – Dr. Hughes/HSS**
- AmnioFix® Sheets in Open Craniotomy (RCT, multicenter) – Multi-PI **
- AmnioFix® in Robotic Laparoscopic Prostatectomy (RALP) studies – Dr. Patel retrospective and prospective RCT**
- AmnioFix® Micronized in plantar fasciitis – Dr. Zelen **

- Multiple case series with amniotic membrane in non-wound medical environments at various locations

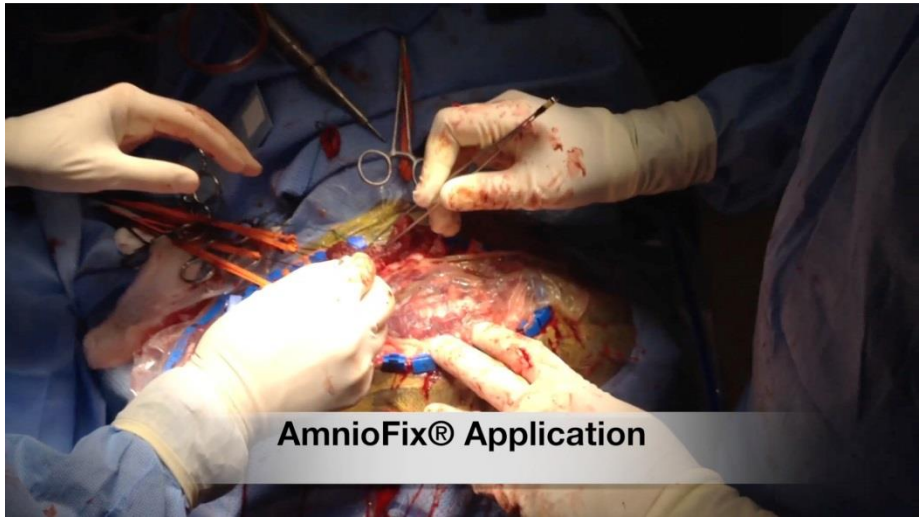
** = IRB approved RCT

SPINE SURGERY

Single center trial currently under way at Cornell's Hospital for Special Surgery in New York City.

Experimental design built from experiences at the Virginia Spine Institute, where ease of tissue plane dissection was demonstrated with follow up surgery.

CRANIOTOMY SURGERY



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UROLOGY APPLICATIONS

Urologic applications of dHACM have been explored in ureteral reconstruction, bladder reconstruction, and nerve sparing prostatic resections.

We have completed a robot assisted laparoscopic prostatectomy (RALP) study using AmnioFix to preserve post-operative erectile function in men undergoing micro-invasive prostatectomy.

Results are encouraging, suggesting more rapid return to erectile function is possible with proper implantation of dHACM in these patients.

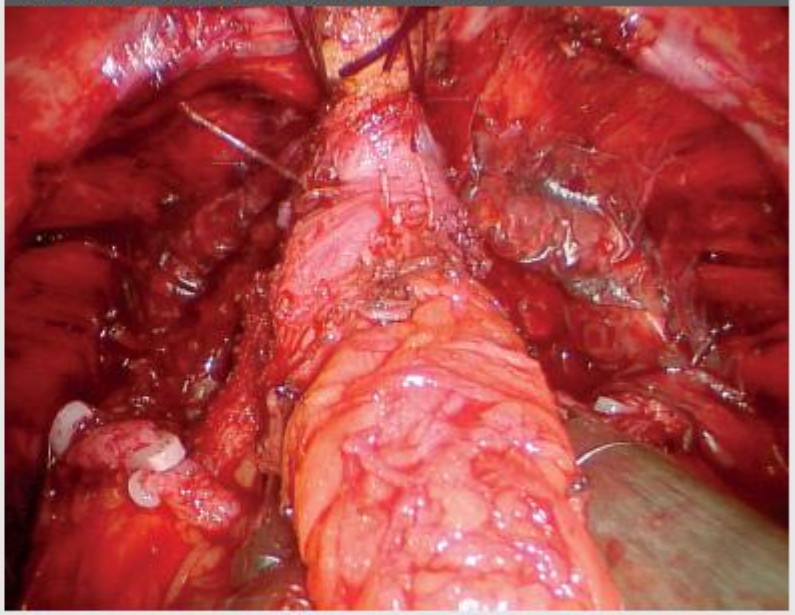
UROLOGY CASE EXAMPLE:

AmnioFix® Application in Nerve Sparing Prostatectomy Procedure

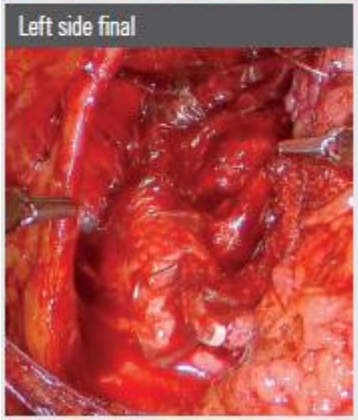
Left side applied

Right side applied

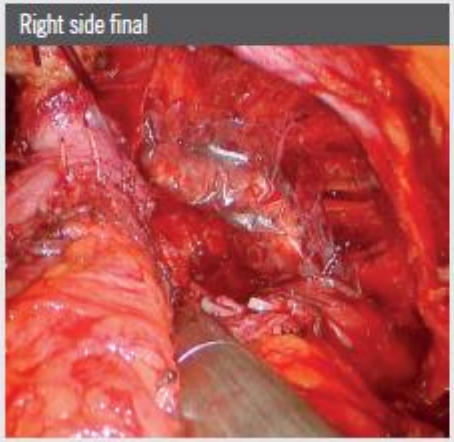
Bilateral final application following urethral anastomosis



Left side final



Right side final



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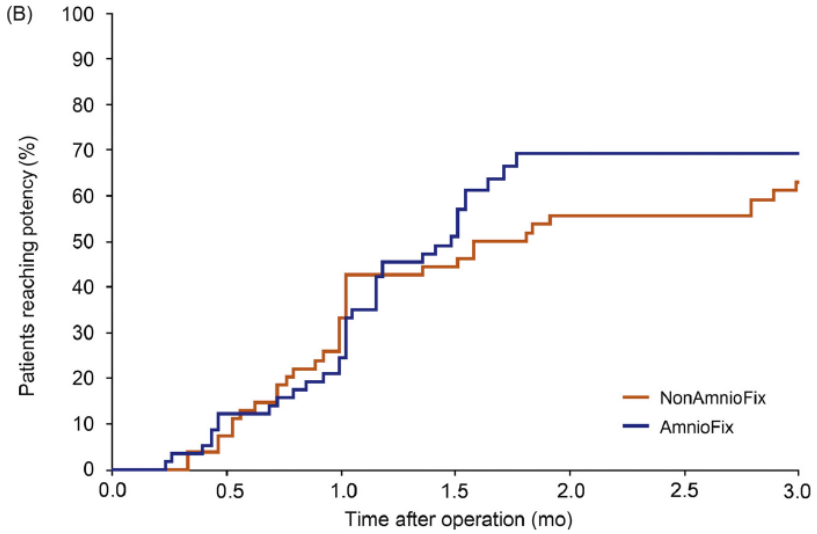
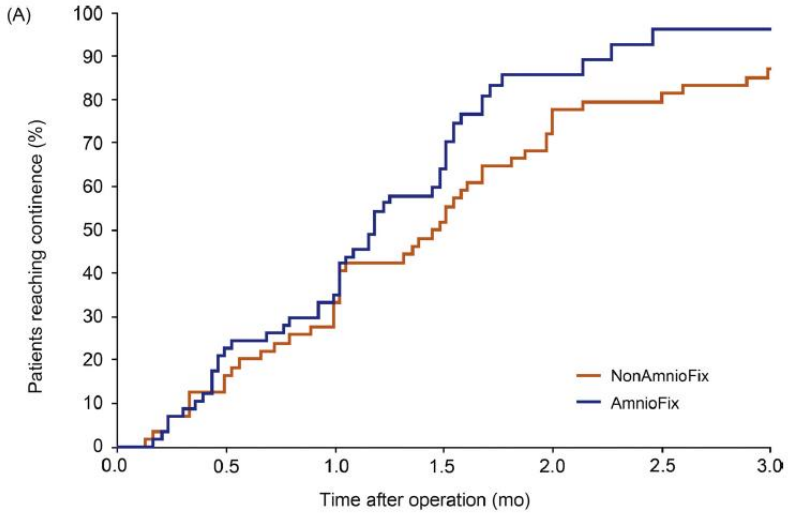
RETURN OF ERECTILE FUNCTION IN RALP WITH AMNIOFIX



Time to Achieve Potency



Time to Achieve Continence

Patel, V, et al "Dehydrated Human Amniotic Membrane Allograft Nerve Wrap Around the Prostatic Neurovascular Bundle Accelerates Early Return to Continence and Potency Following Robot-assisted Radical Prostatectomy (RALP): Propensity Score-matched Analysis." Eur Urol. (67)6. 2015 Jun. pp 977-80.

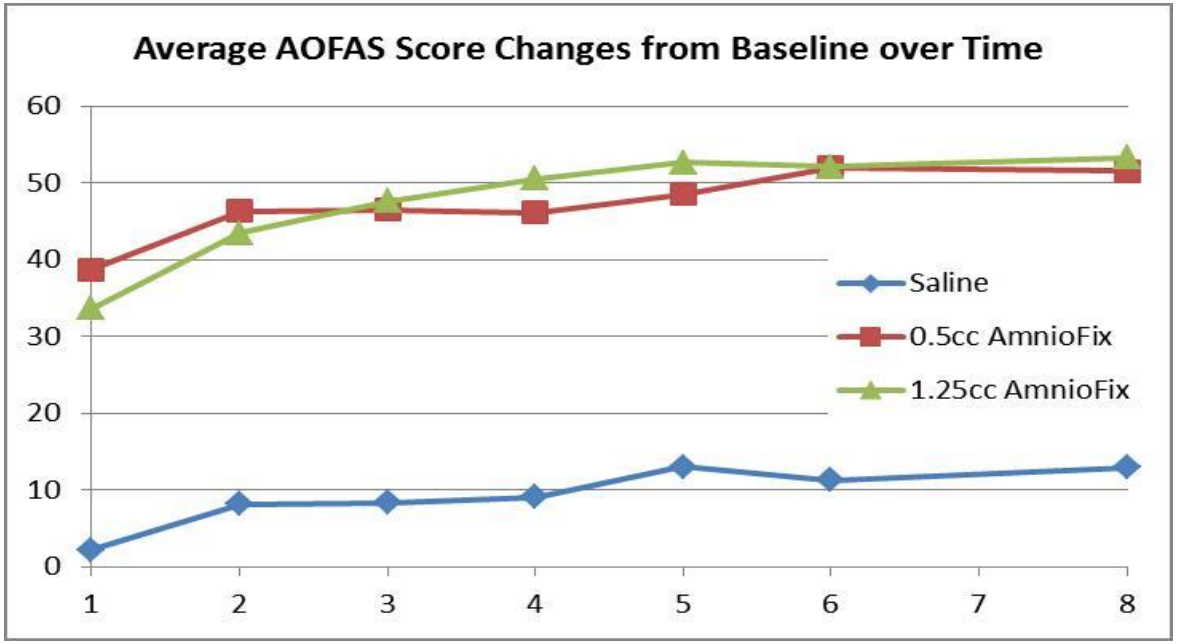
dHACM Micronized

PLANTAR FASCIITIS FDA IND APPLICATION

- **History:**
  - dHACM micronized formulation can effectively treat a number of conditions.
  - FDA review suggested IND level research with progression to BLA.
- **FDA Approved Approach:**
  - **Study design has been approved by the FDA to move forward.**
  - Phase IIb, Prospective, Single-Blinded, Randomized Controlled Trial of the Micronized dHACM Injection as Compared to the Saline Placebo for plantar fasciitis.

PRIMARY OUTCOME:

MEAN DIFFERENCE IN AOFAS HINDFOOT SCORE COMPARED TO BASELINE MEASUREMENT DURING THE STUDY PERIOD



- Within each group significantly higher scores were observed between baseline and week eight (all $p \leq 0.01$), although significantly greater improvement was noted in the groups receiving dHACM vs. controls (all $p<0.001$).
- Similar improvement in AOFAS Hindfoot scores were observed for those patients receiving 0.5cc or 1.25cc dHACM at any week.

Zelen, C; Poka, A; and Andrews, J "Prospective, Randomized, Blinded, Comparative Study of Injectable Micronized Dehydrated Amniotic/Chorionic Membrane Allograft for Plantar Fasciitis A Feasibility Study." Foot Ankle Int. (34)10. August 14, 2013. pp 1332-9.

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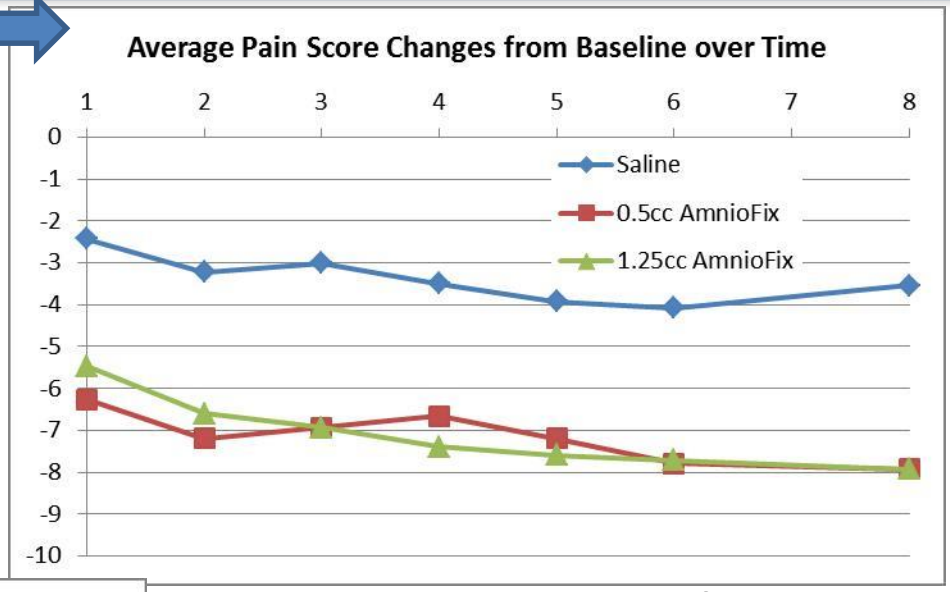
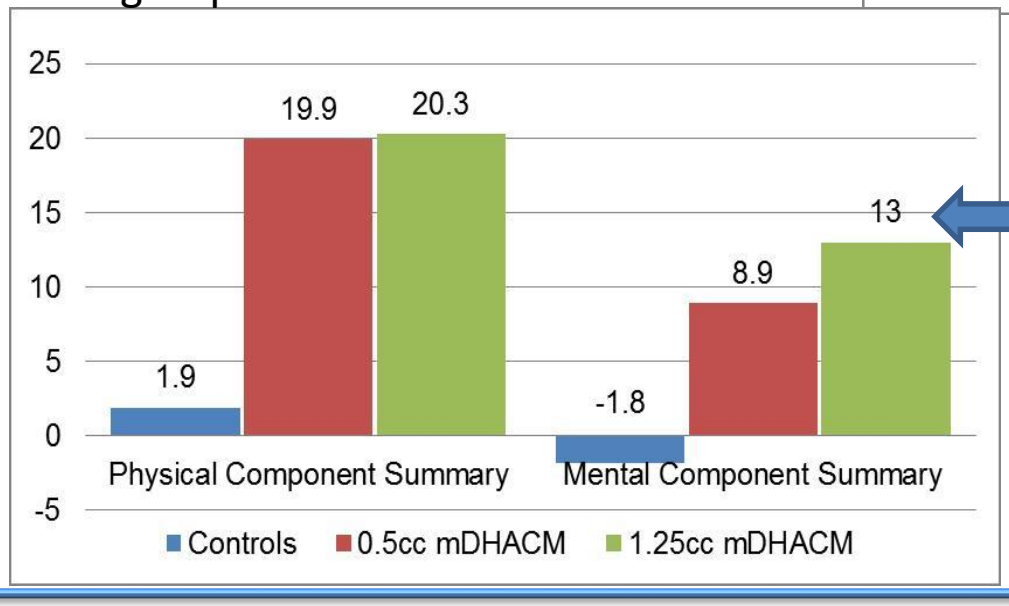
OTHER OUTCOME MEASURES

Wong-Baker FACES™ Score:

- Patients receiving dHACM reported significantly greater reductions in pain from baseline reports (all $p<0.001$ controls vs. 0.5cc dHACM, and all $p<0.004$ controls vs. 1.25cc dHACM).
- Pain reduction from baseline appears similar for the dHACM groups.





QualityMetric's SF-36v2® Standard Health Survey:

- Patients receiving dHACM had significantly greater improvement in physical and mental scores vs. controls (all $p\leq0.002$).
- The magnitude of difference between baseline and week 8 appears similar when comparing the dHACM groups.

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CASE 222: ULNAR LIGAMENT SPRAIN

- **Dx:** Ular Collateral Ligament Sprain (partial tear), R elbow
- **HPI:** 14 yo presented 1/24/14 with chronic right elbow pain for three months playing baseball. MRI scan right elbow 4/3/14 showed a "high-grade partial, to near complete tear, of the anterior bundle of the ulnar collateral ligament".
- **Tx:** Patient's Rt. Medial Elbow injected with mixture of 40mg AmnioFix solution on April 16th, 2014 using ultrasound guidance.
- **Follow Up:**
  - **2 weeks post injection pt noticed "much improvement" with pain.**
  - 6 weeks post injection pt denied any pain in his elbow; able to do all his daily activities.
  - MRI at six weeks post injection; Ulnar Collateral Ligament healing at its attachment site at the medial epicondyle. Patient was advised to begin a progressive throwing.
  - RTO 4/6/2015 c/o R elbow pain playing baseball for past 4 months. Symptoms similar to previous elbow problem approx. 1 year ago when he was dx'd with UCL sprain.
  - **Subsequent workup, at approximately 1 year demonstrates previously injured UCL has resolved and no longer has edema in the area.**

Amniotic Fluid

AMNIOTIC FLUID

- A current market has been established for its clinical use.
- Historical clinical use documented in scientific and clinical publications includes orthopedic applications such as chronic knee pain.
- Future trials are anticipated to explore the potential uses of this material in clinical applications.

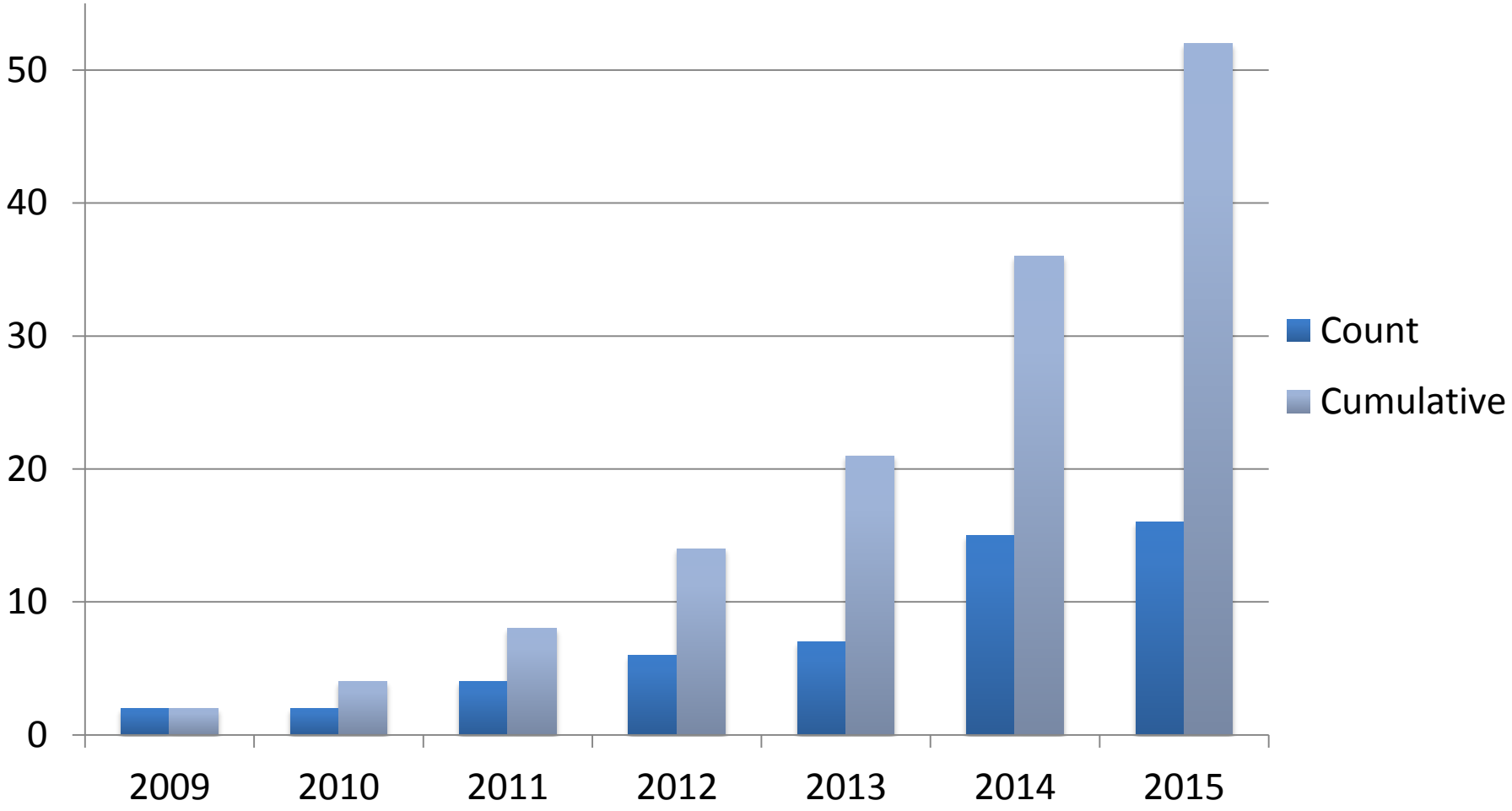
Publications

PUBLICATION PRESENCE

- >25 Peer reviewed, journal articles published in indexed medical scientific journals
  - basic science/preclinical articles
  - clinical studies
- >50 Articles on various applications of dHACM
- >100 Posters have been presented at national meetings by independent practitioners.
- The MiMedx Compendium
- The MiMedx Primer

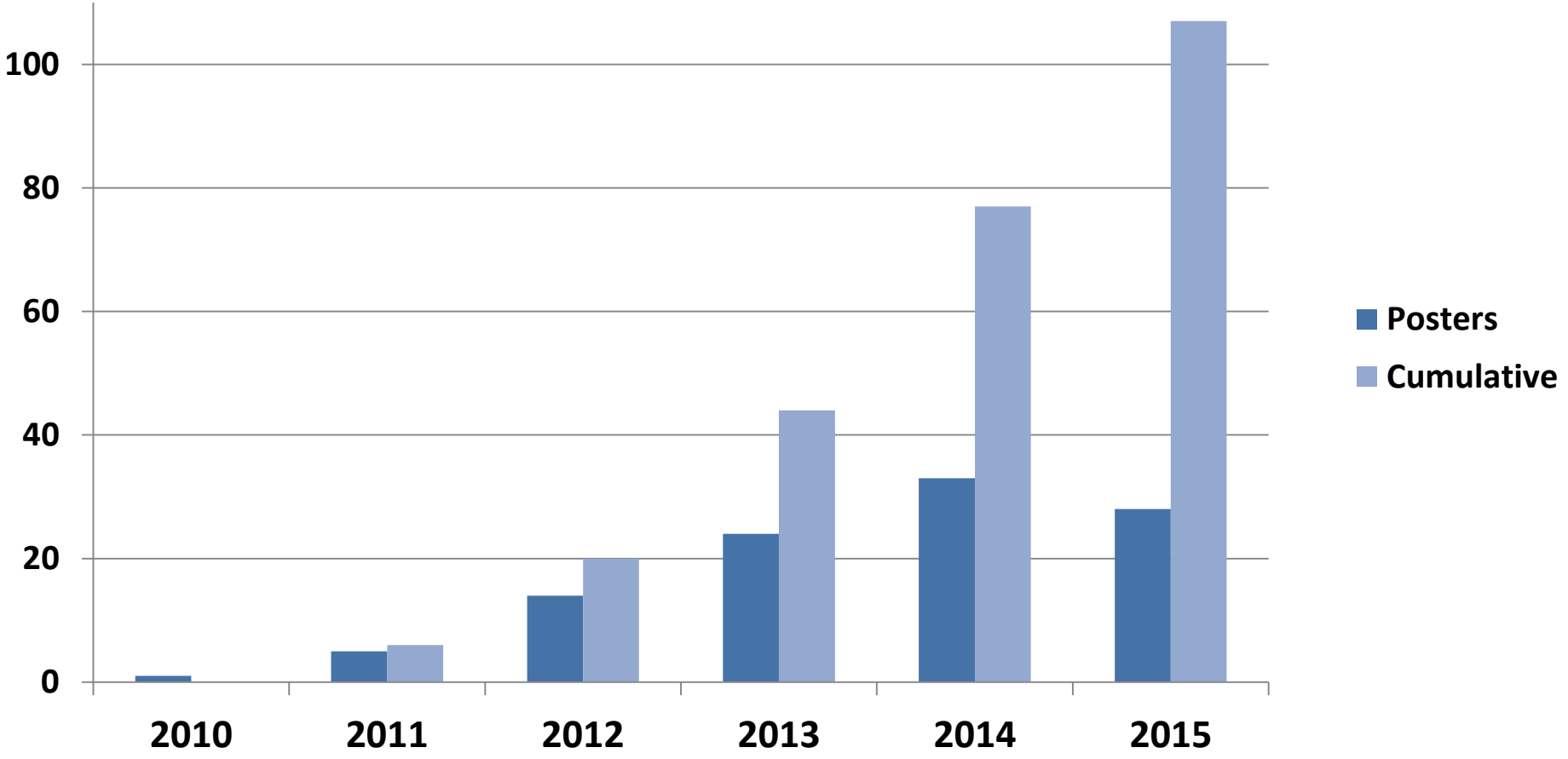
MIMEDX ARTICLES

As of October 1st, 2015



MIMEDX POSTER PRESENTATIONS

As of October 1st, 2015



Clinical Application: Cases and Case Studies

Wound Applications

COMPLEX WOUNDS: EXPOSED BONE/TENDON

dHACM can be used for both primary closure and as an important adjunct in the treatment of complex wounds.

CASE 202: LARGE WOUND HEALING PROGRESSION

Initial Wound, Pretreatment
Mid-Feb 2015

Second Application 4/7/2015
Wound < 100 cm sq.

Week of 4/13/2015
Healed

Large wound therapy:

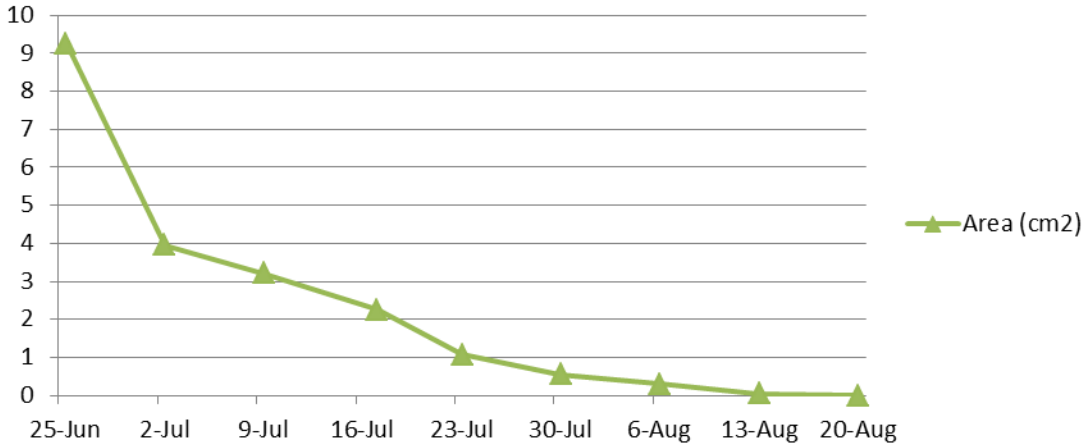
- ***Ulcers can grow to large sizes, sometimes in excess of 300 or 400 sq cm.***
- ***dHACM is an appropriate therapy for large and refractory wounds.***
- ***Large ulcers are costly to treat due to both chronicity and the higher probability of surgery , admissions for cellulitis, and limb loss.***
- ***Ulcer treatment is different in these cases.***
- ***Edges of the wound may be amenable to treatment rather than full ulcer.***

PRESSURE ULCERS

July 3

July 18

August 21



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MOHS SURGERY

Right Nasal Area

Left Clavicle (Dehis-cence)

Right Posterior Ear

Warner, J. and Warner, K. Use of Dehydrated Human Amnion Chorion Membrane Allograft for Reconstruction of Mohs Micrographic Surgical Defects and Dehisced Wounds. Poster Presentation, American College of Mohs Surgeons Annual Meeting, May 2013.

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PEDIATRIC PARTIAL-THICKNESS BURN

A toddler presented with a partial-thickness, typical scald burn on the face and head. EpiFix® was applied, and the patient's pain resolved quickly after covering the raw nerve endings in the burn. The patient returned home the day after application and returned one week later for follow-up (Figure 2). The pain was managed and the burn was healing well at that point. At 3 to 4 weeks after the application, the patient was getting some pigment back in the skin and showed no signs of future scarring (Figure 3).

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VENOUS LEG ULCERS IN DARK COMPLEXION PATIENT

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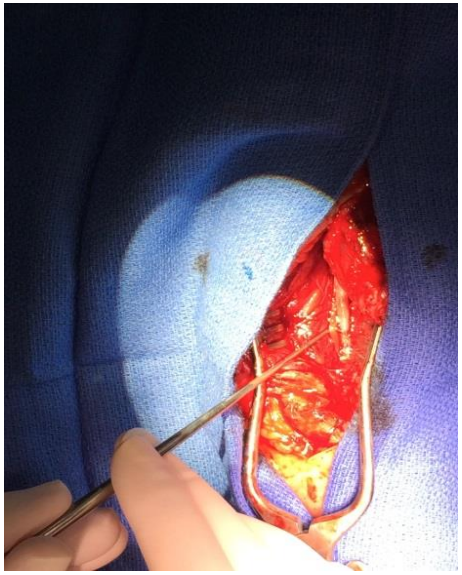
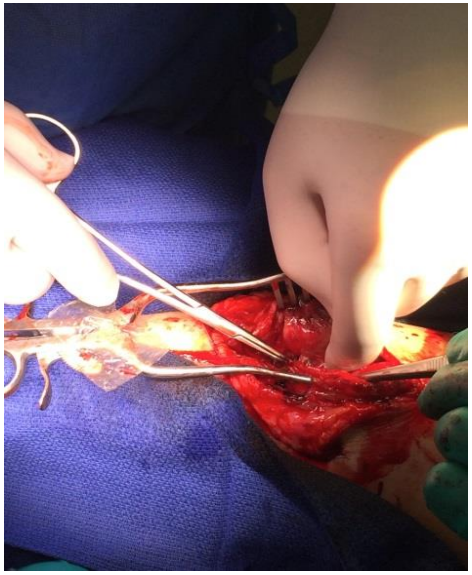
Surgical Applications

CASE 196: NERVE REPAIR

12 yo girl tripped over her dishwasher and was accidently stabbed in the leg. Developed decreased dorsiflexion of the great toe and ankle. Also a pulsatile mass in the mid-calf, lateral to the tibia found to be a pseudo-aneurysm, complicated by compression of the anterior tibial nerve. A pseudoaneurysm drained and repaired.





The nerve was not damaged in the initial trauma or at surgery. The patient recovered uneventfully and is now able to move her foot and toe.

CASE 246: WOUND DEHISCENCE

Figure 2
4 weeks of negative pressure therapy, 1st EpiFix applied

Figure 3
Week 2: 2nd EpiFix applied

Figure 4
Week 4: 3rd EpiFix applied

Figure 5
Week 8: Wound healed and stable

- 62 yr old overweight, diabetic male smoker.
- Post op wound dehiscence of ventral hernia repair, occurred at one week post op.
- EpiFix placed at week 4 after low response noted.
- Wound healed by week 8.

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CASE #253: ENDOMETRIOSIS REPAIR

38 yo female with severe, chronic pelvic pain underwent single port laparoscopic surgery for adhesions associated with endometriosis . Surgical wounds were created in 3 areas on the uterus due to the resection of the peritoneal layer to address the endometriosis and remove adhesions. (Figures 1- 2).

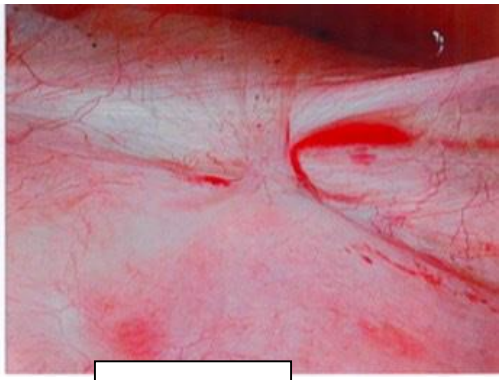

Figure 1

Figure 2

Two 4 cm x 6 cm AmnioFix grafts were cut into smaller sizes to enable coverage of the 3 surgical wounds to the uterus in order to enhance healing, provide a barrier, and reduce scarring (Figures 3-5).

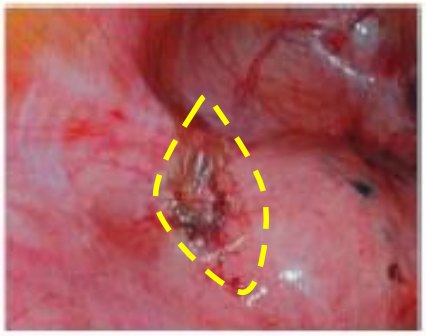

Figure 3

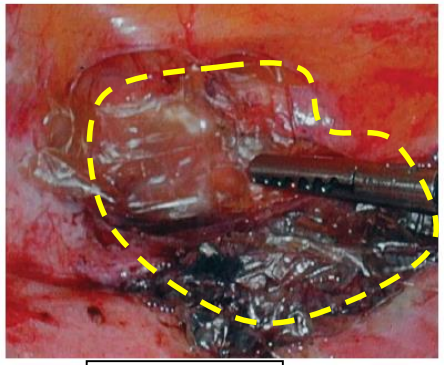

Figure 4

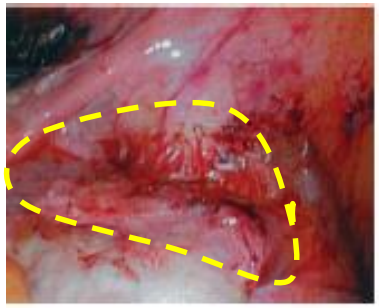

Figure 5

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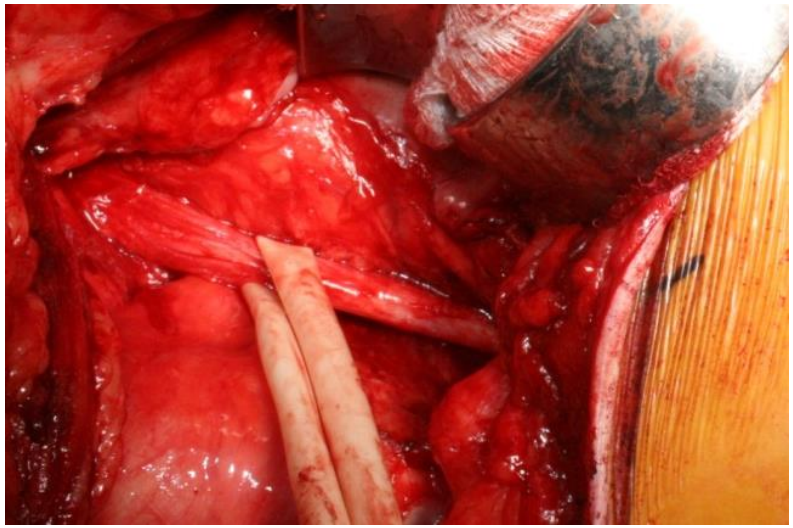
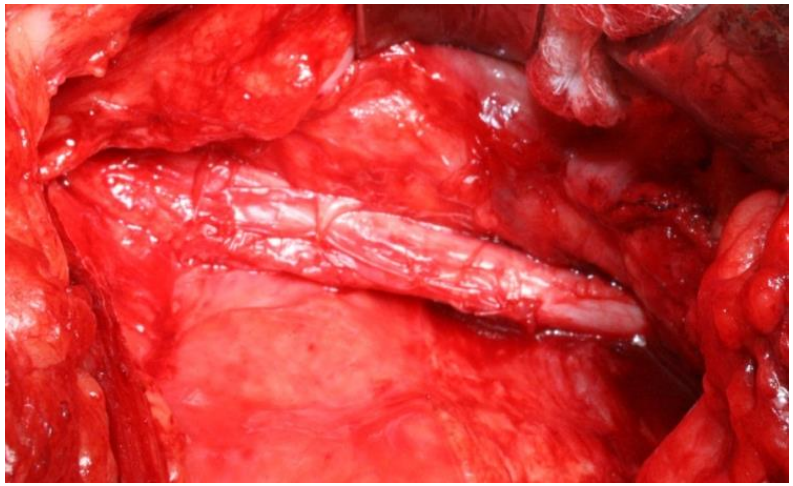
CASE: DHACM NERVE WRAP

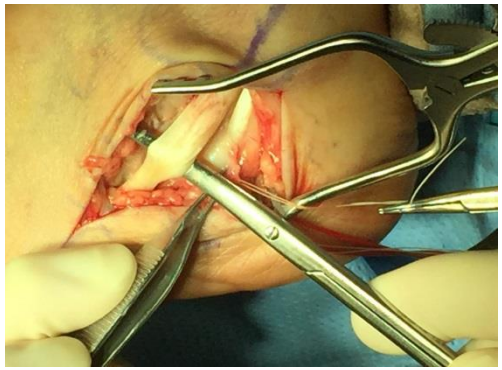
- 29 y/o female
- Two prior releases on the involved extremity
- Revision Release Left Piriformis (Sciatic Nerve Neuroplasty) with AmnioFix® Wrap

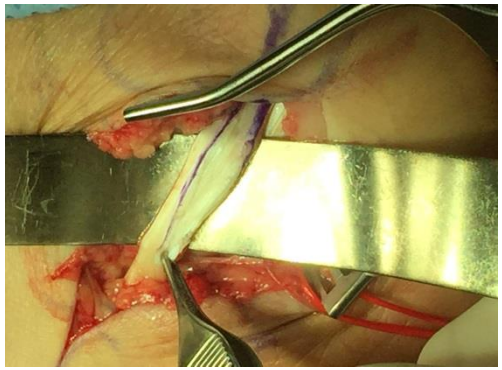


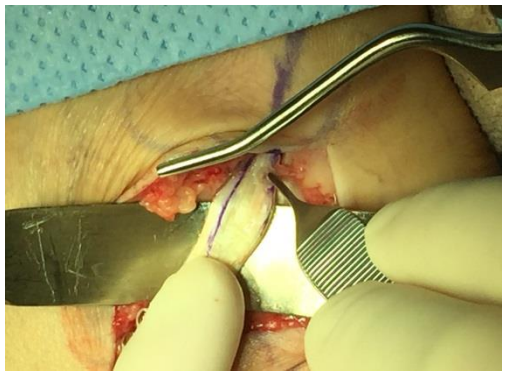


Orthopedic Applications

CASE 185: USING AMNIOFIX® POST PERONEAL TENDON REPAIR







Post-op day 3 with no pain and minimal to no swelling/edema

CASE #214 TENDON REPAIR

Two patients with identical injuries.

Day 0 both underwent surgery for repair of peroneal tendon tear

- **Patient #1 with AmnioFix**
- **Patient #2 without AmnioFix**

Both had exact same postoperative course

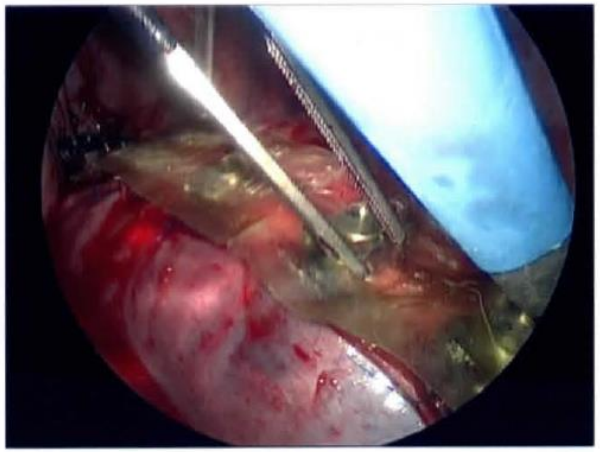
- **1 week NWB in compressive posterior split**
- **2 weeks NWB in fiberglass cast**
- **4 weeks weight bearing in removable cam walker and physical therapy**

Day 107 –

- **Patient #1 was pain free and released to full duties in Air Force reserves without restrictions**
- **Patient #2 still complains of pain and swelling and has a VAS pain rating of 4**

CASE 255: PEDIATRIC SPINE SURGERY

Procedure: Ant T5-L3instrumentation And Scoliosis Correction



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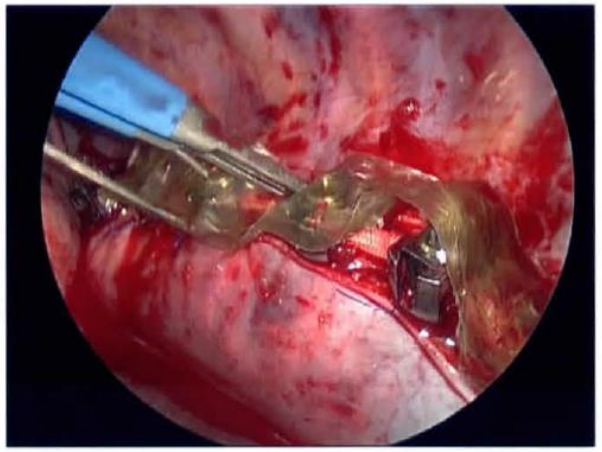

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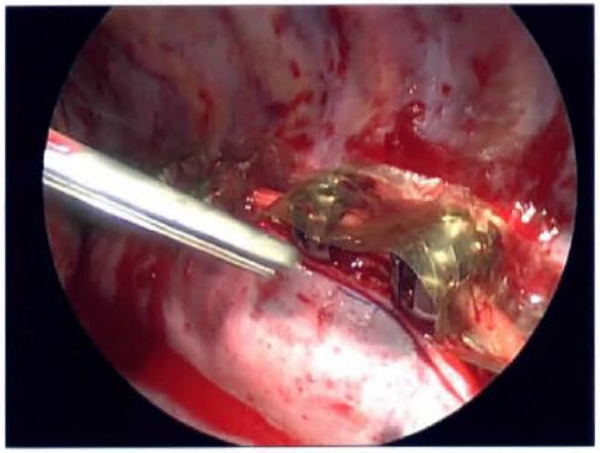
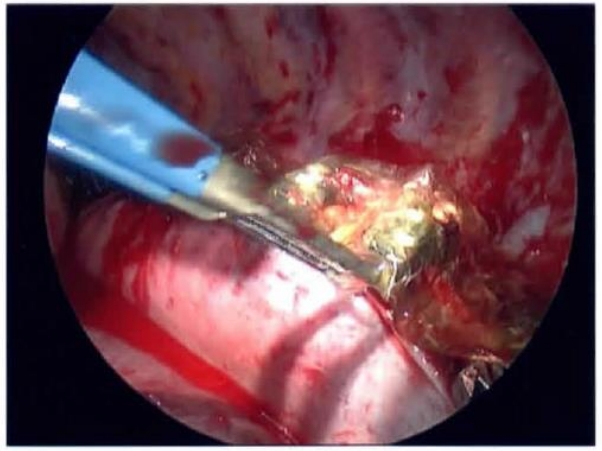


IMG029



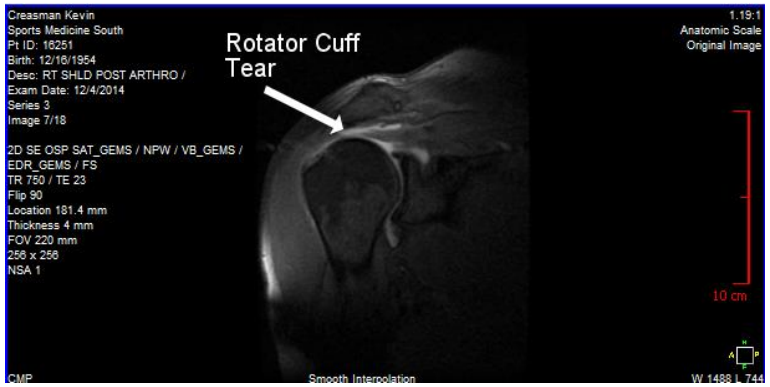
IMG030

MiMedx

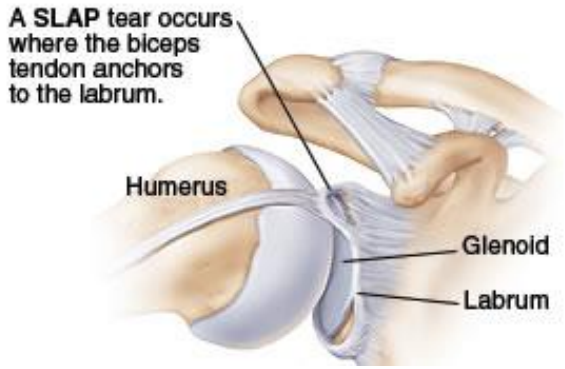
Micronized dHACM Injectable Applications

CASE 240: ROTATOR CUFF TEAR

- Tx (1/27/2015) = Rt. shoulder rotator cuff repair, lesion repair and subacromial decompression.



- Subsequent tx = repeat surgery (3/17/2015) after re-injuring Rt. shoulder. At that time the patient underwent a Rt. shoulder arthroscopy with debridement, mini-open rotator cuff repair with biceps tenodesis. An AmnioFix sheet (4x6) was placed over the rotator cuff because of its attenuation.



SUMMARY

- There is a **large and increasing body of supportive scientific research** for the medical use of amniotic membrane and MiMedx dHACM in particular.
- This literature defines the mechanism to be growth factor mediated cell differentiation, cell migration and stem cell attraction.
- The clinical effectiveness of MiMedx dHACM is due to its patented PURION® processing. "All amniotic membrane is not equal."
- Clinical studies supply an impressive body of **evidence based medicine** for this material in multiple areas of clinical applications across diverse clinical specialties.
- MiMedx is an **industry leader** in amniotic membrane based allografts, with **extensive, patented intellectual property** behind their preparation.
- MiMedx dHACM is highly effective and results in **much less wastage, with resulting cost savings**.
- **Widespread industry adoption** and increasing use of this material is seen in Medicare, Medicaid, TRICARE, VA, Blue Cross Plans and Commercial Insurers.

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

Angiogenesis in Regenerative Medicine

William W. Li, M.D.

President and Medical Director

The Angiogenesis Foundation

MiMedx Analyst Meeting

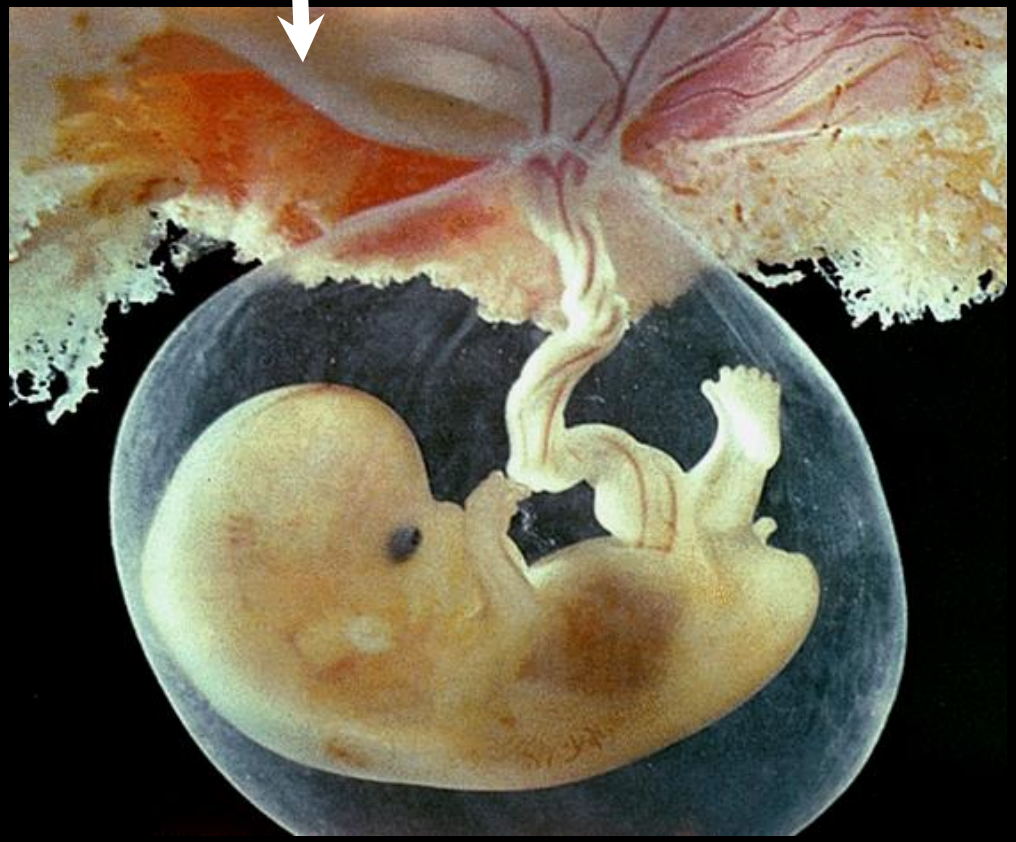
New York, NY

October 13, 2015

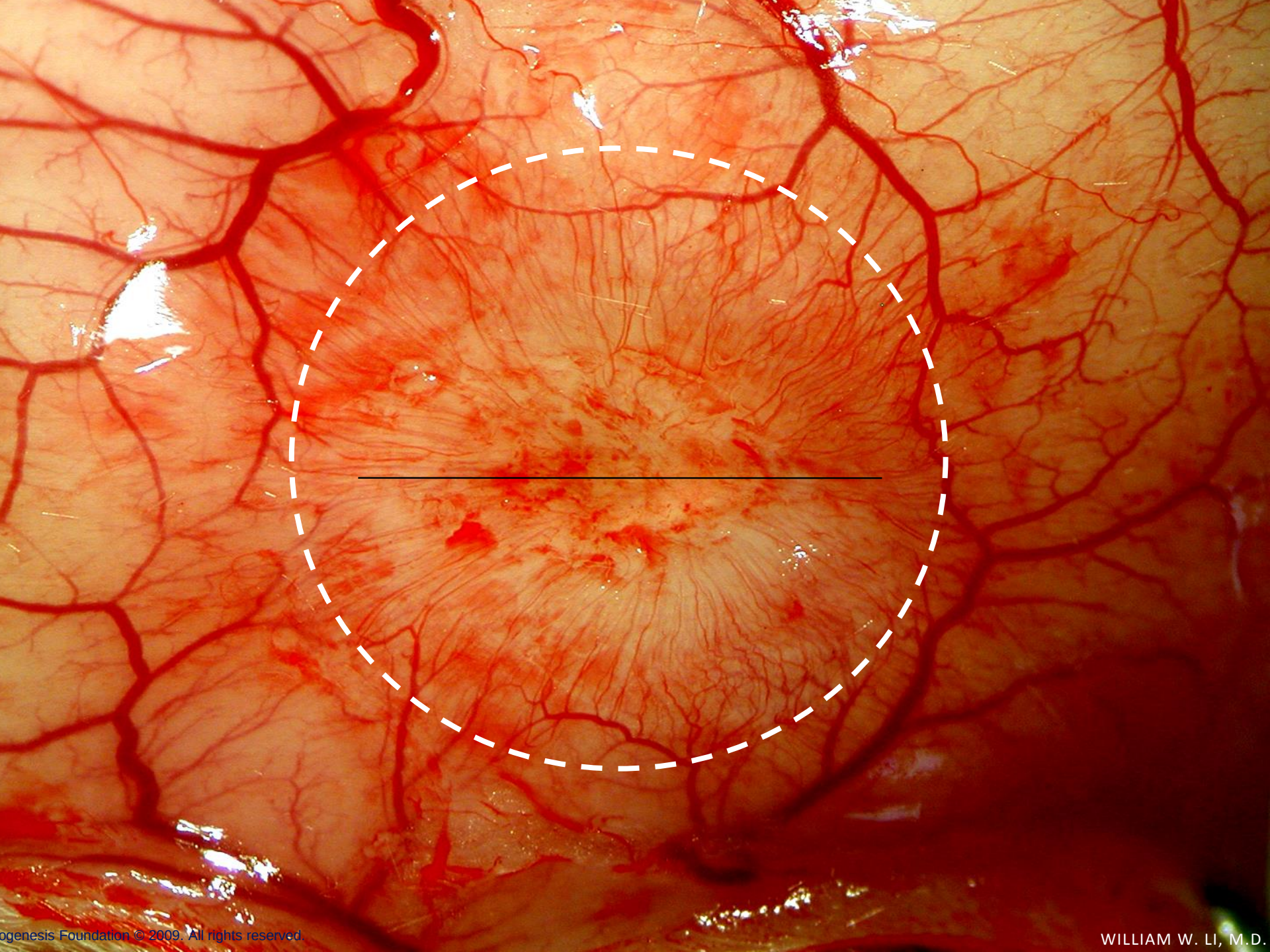

10 µm

Uterus

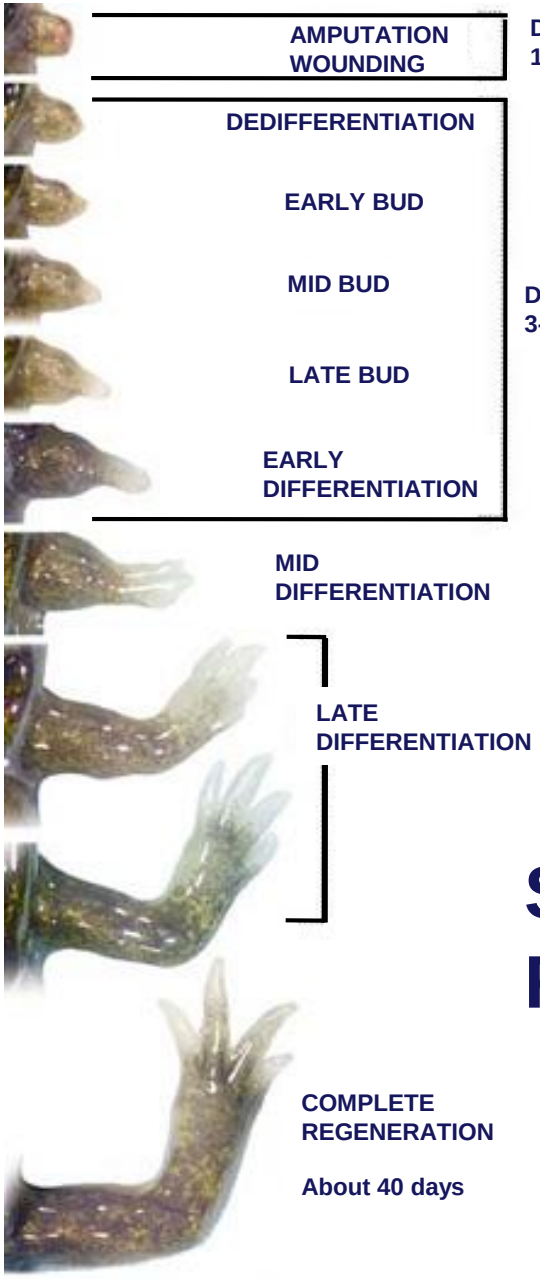
Pregnancy



WILLIAM W. LI, M.D.



WILLIAM W. LI, M.D.

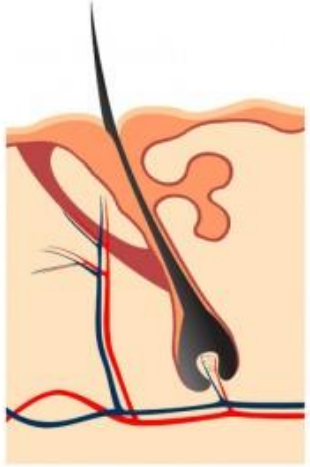


Stages of Regeneration

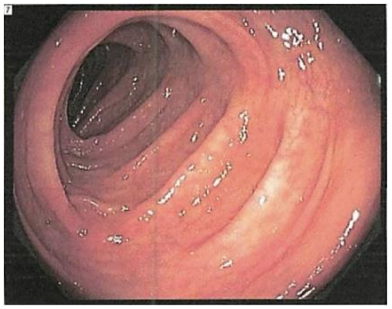
"Humans cannot regenerate"

— Axiom of biology

But we do regenerate …

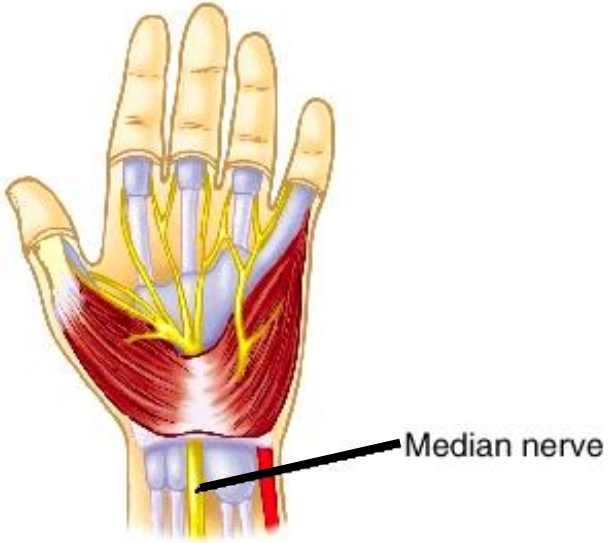


Hair & Skin



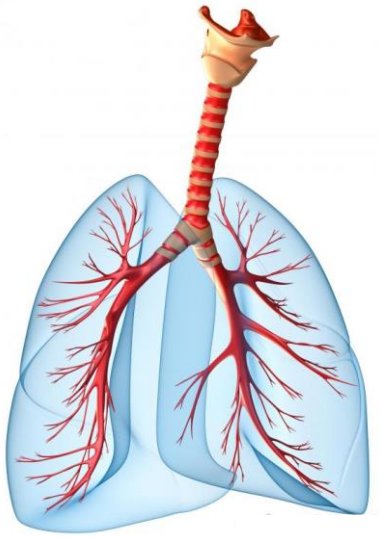
Gut

Oral mucosa



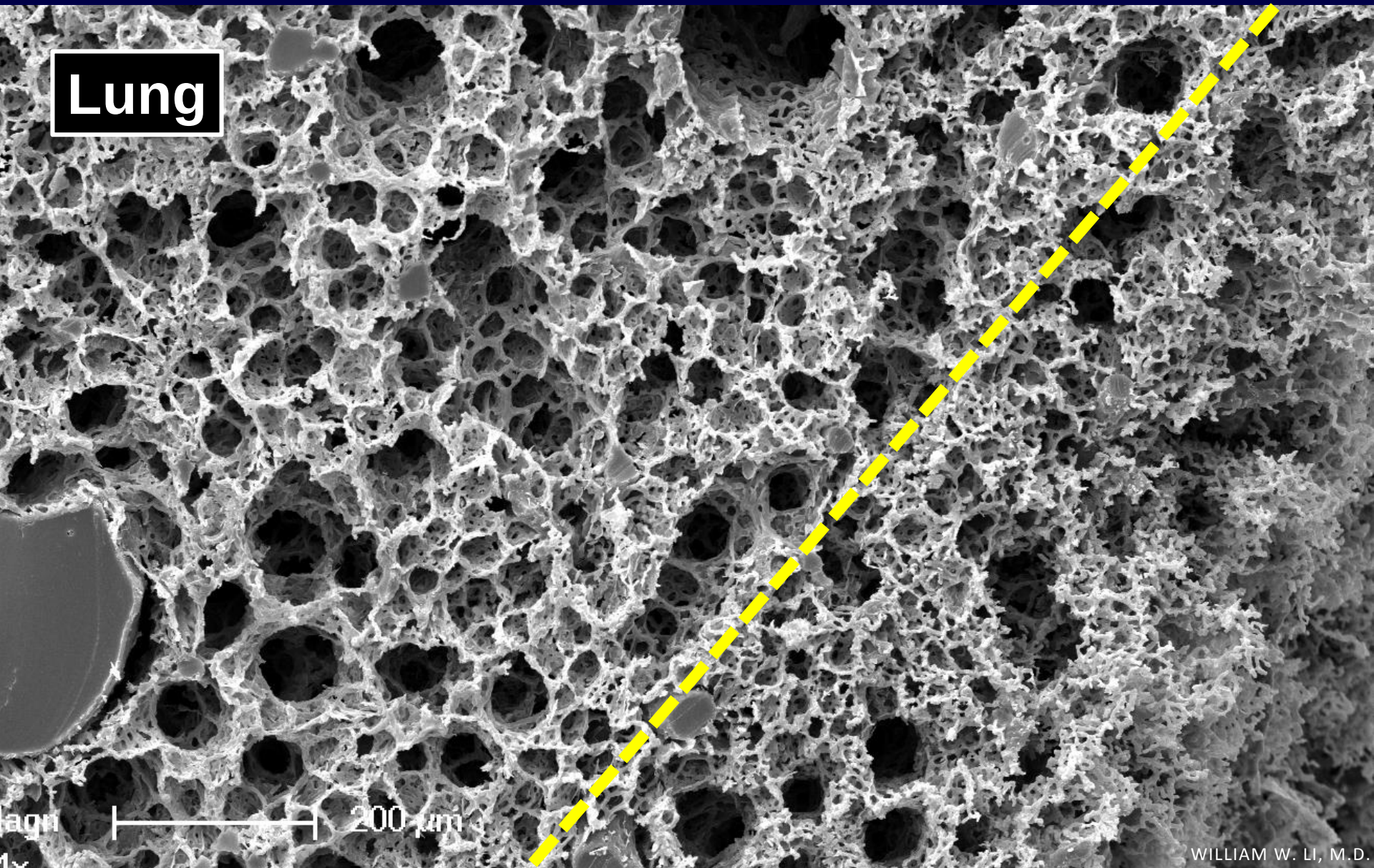
Nerve

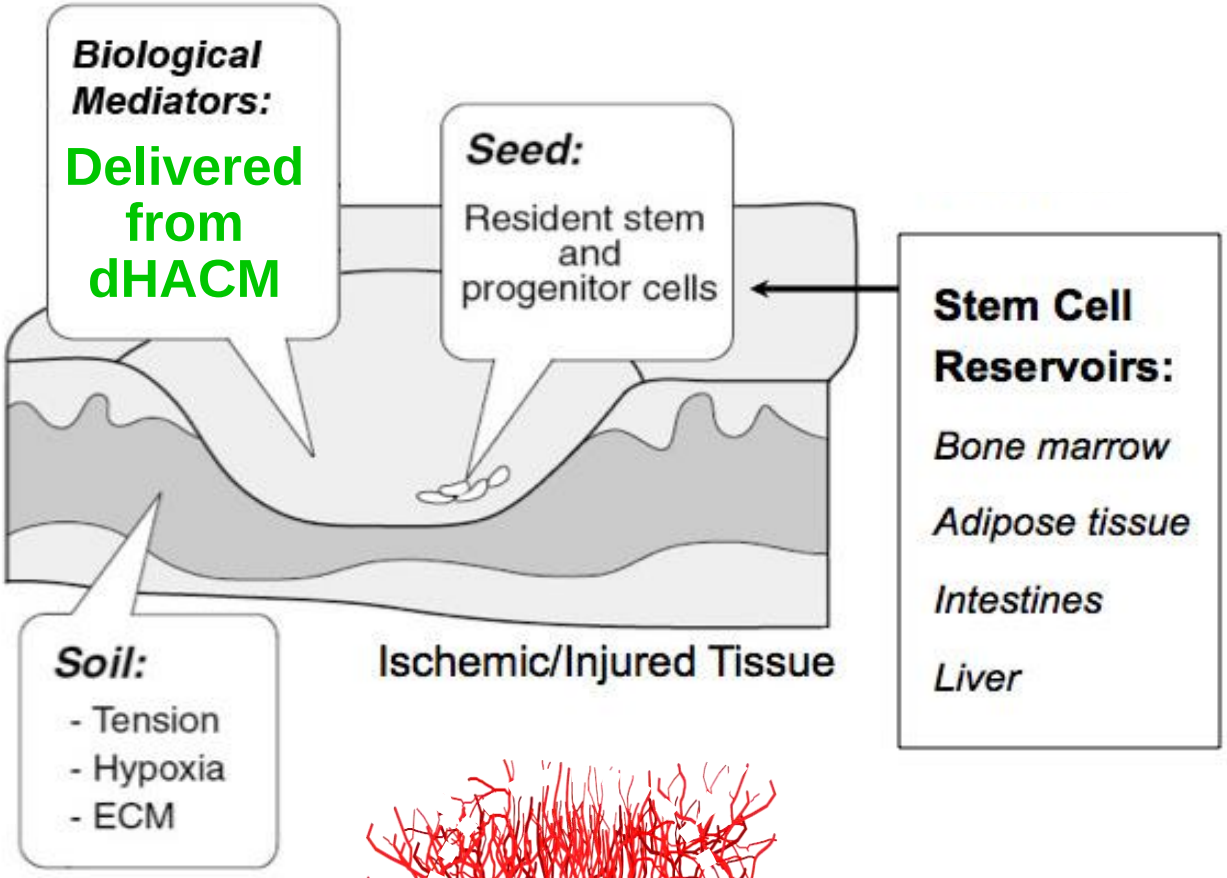
Liver

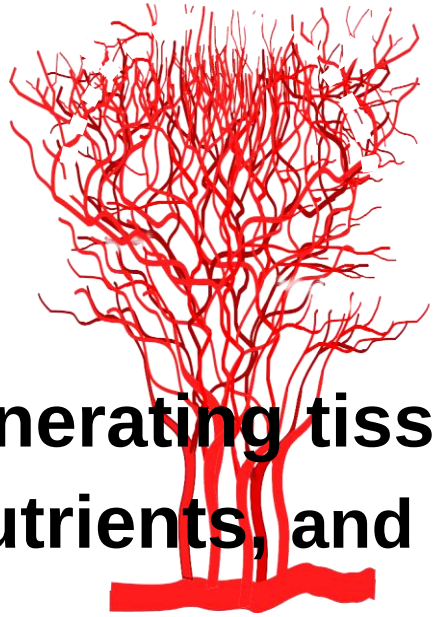


Lungs

And regeneration is accompanied by angiogenesis

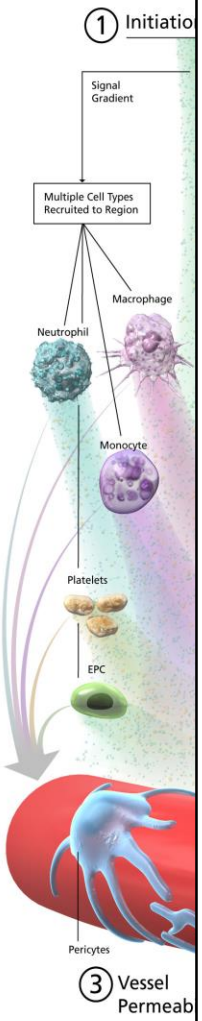


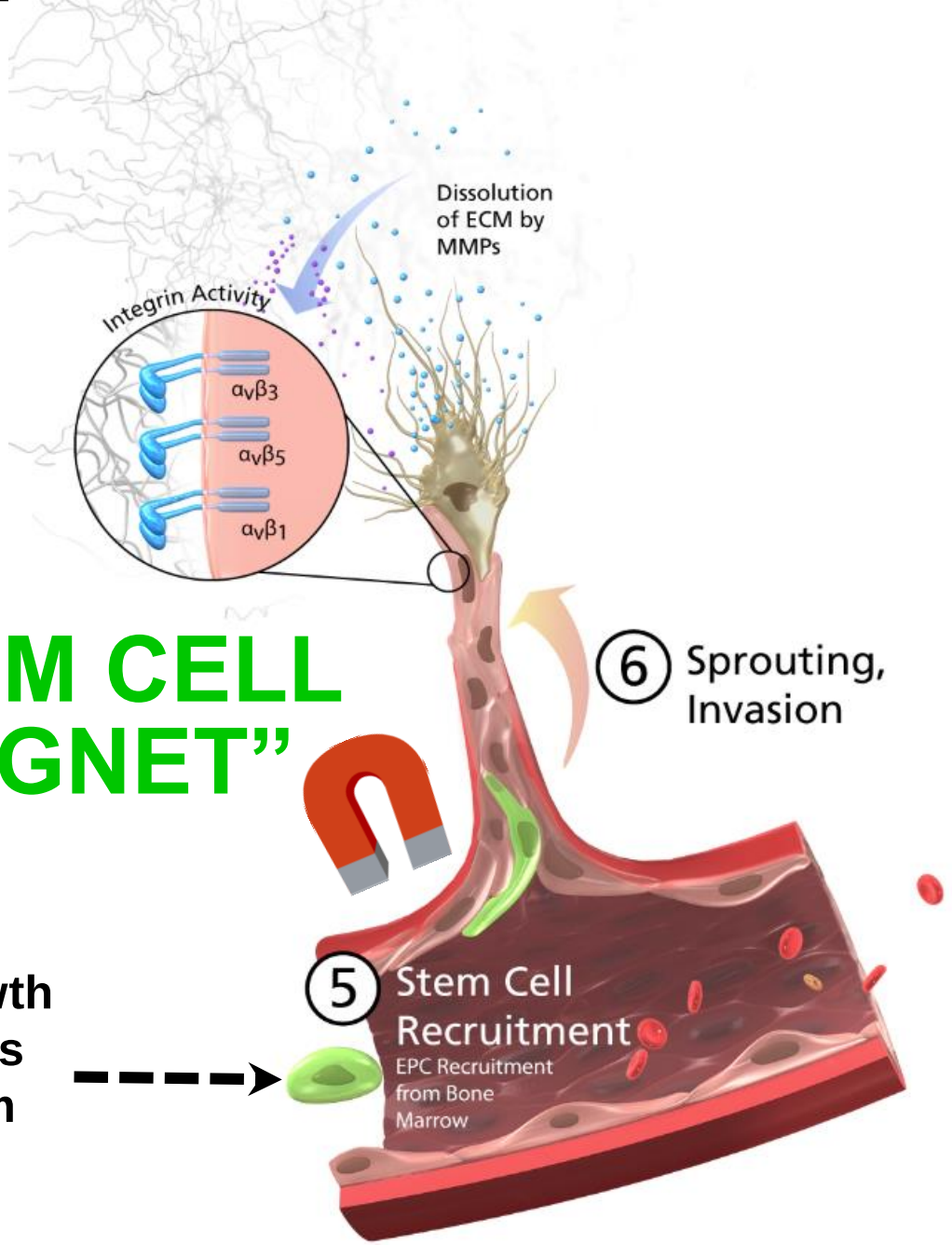




…Because every regenerating tissue needs a <u>blood supply</u> for oxygen, nutrients, and survival factors.

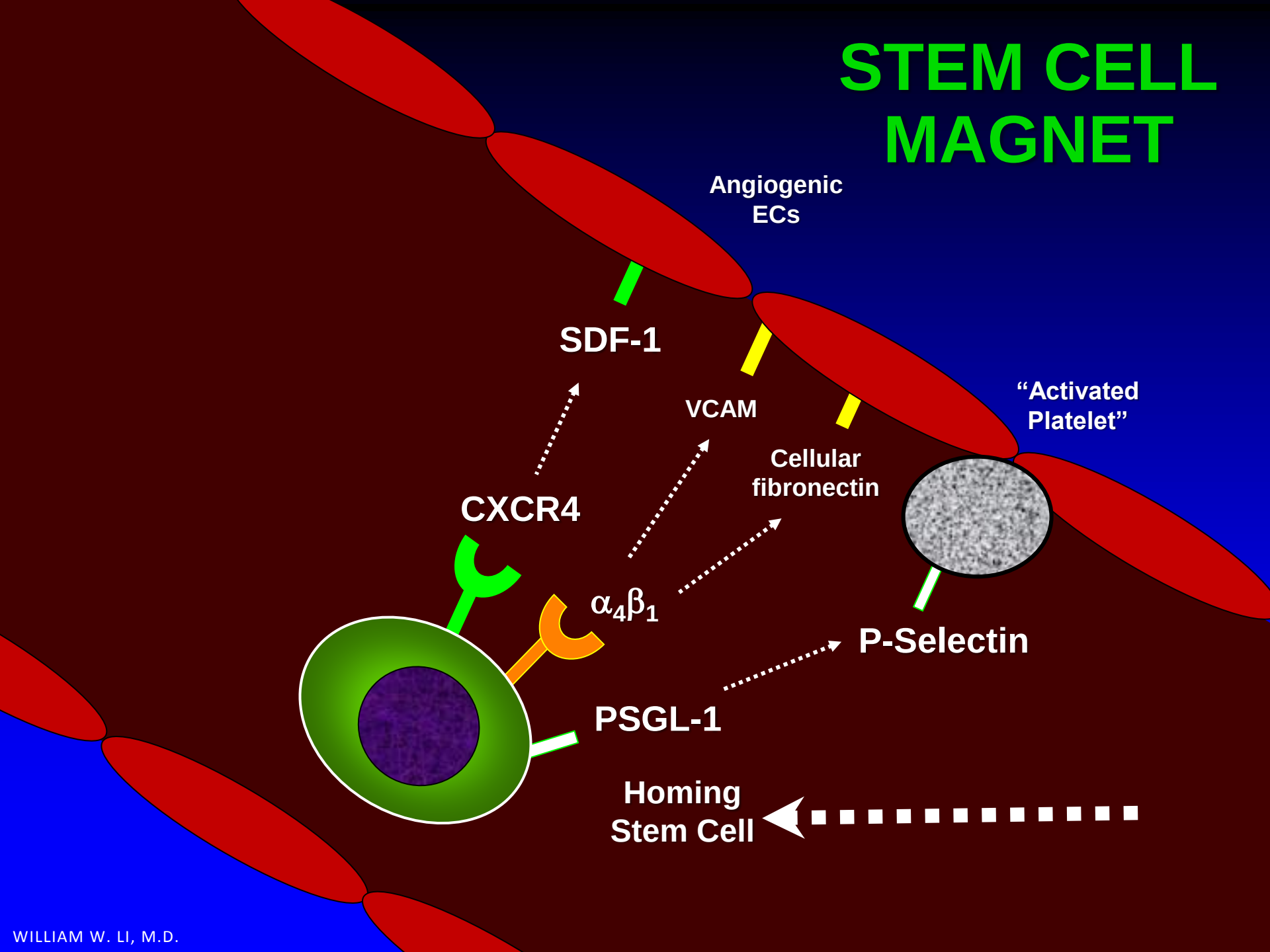
ANGI





"STEM CELL MAGNET"

Soluble Growth Factor signals mobilize stem cells …



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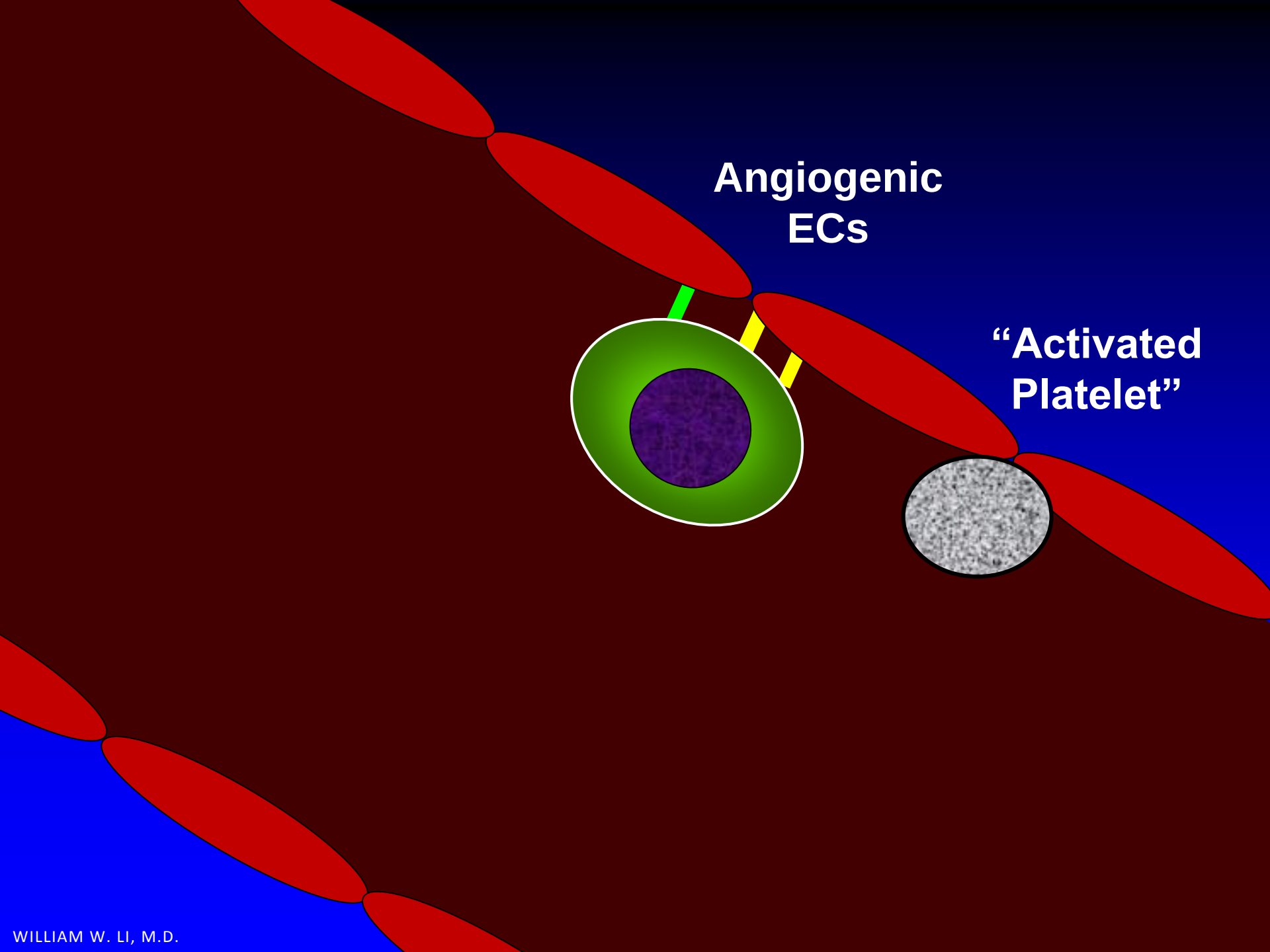
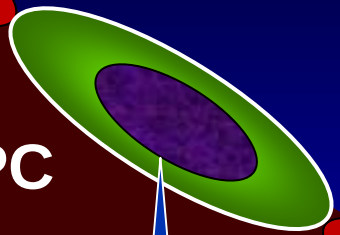

Angiogenic
ECs
“Activated
Platelet”



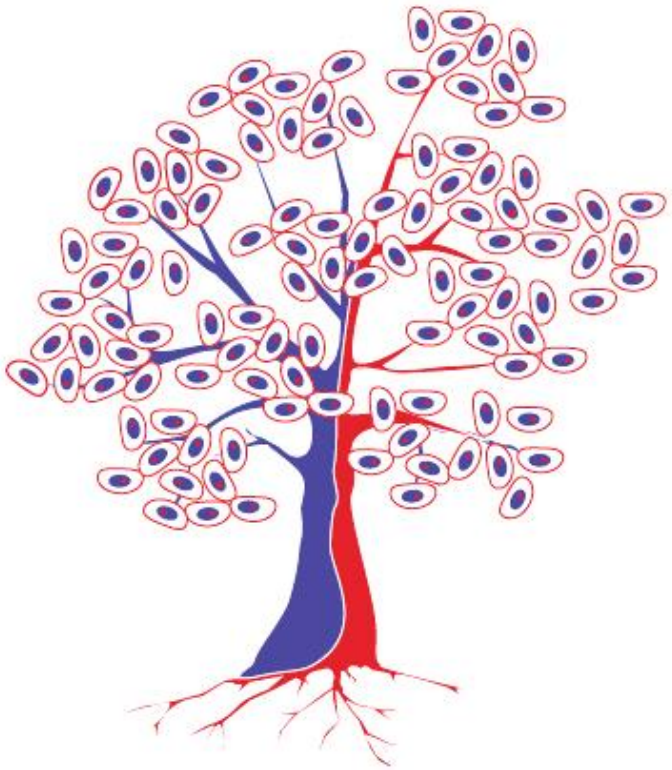
Incorporated EPC

PARACRINE FACTORS:

Adrenomedullin
Angio-associated Migratory Protein
Angiogenin
Angiopoietin-1
Bone Morphogenic Protein-2, -6
Connective Tissue Growth Factor
Endothelin-1
Fibroblast growth factor-2, -7
Hepatocyte Growth factor
Insulin-like Growth Factor-1
Interleukin-1, -6, -11
Kit Ligand
MMP-1, -2, -9
Monocyte chemoattractant protein-1
Placental growth factor
Platelet-derived growth factor
Pleiotrophin
Frizzled-related protein-1, -2
Thrombospondin-1
Thymosin β4
TIMP-1, -2
Transforming Growth Factor-β
Tumor Necrosis Factor-α
Vascular Endothelial Growth Factor

2020: A New Vision

A Future for Regenerative Medicine



U.S. Department of Health and Human Services
Washington, DC

2020: A New Vision

A Future for Regenerative Medicine

How regenerative medicine works

Regenerative medicine is the application of tissue science, tissue engineering, and related biological and engineering principles that restore the structure and function of damaged tissues and organs. This new field encompasses many novel approaches to treatment of disease and restoration of biological function through the following methods:

- Using therapies that prompt the body to autonomously regenerate damaged tissues
- Using tissue engineered implants to prompt regeneration
- Direct transplantation of healthy tissues into damaged environments

According to U.S. Department of Health & Human Services:

- Estimated $4B spent to date in private sector on Regenerative Medicine.
- First generation were skin and cartilage substitutes.
- Projected U.S. market for fully developed field is estimated at $100B.
- Global market to exceed $500B in next 20 years.
- 60% Regenerative Medicine industry in U.S.; ~40% outside Japan, EU, Australia, China.
- HHS proposed Federal Initiative on Regenerative Medicine (FIRM)
  - involving: NIH, FDA, DoD, NIST, Dept. Commerce, NASA, White House Office of Science & Technology, President's Council on Science & Technology, NSF.
- FDA has established Office of Cellular, Tissue, and Gene Therapies (OCTGT).
- Proposed 5, 10, and 20 year milestones with endpoint of RegMed as standard of care.

ClinicalTrials.gov
A service of the U.S. National Institutes of Health

Example: "Heart attack" AND "Los Angeles"
Search for studies: Search
Advanced Search | Help | Studies by Topic | Glossary

Find Studies | About Clinical Studies | Submit Studies | Resources | About This Site

Home > Find Studies > Search Results Text Size

Found 157 studies with search of: “regeneration”

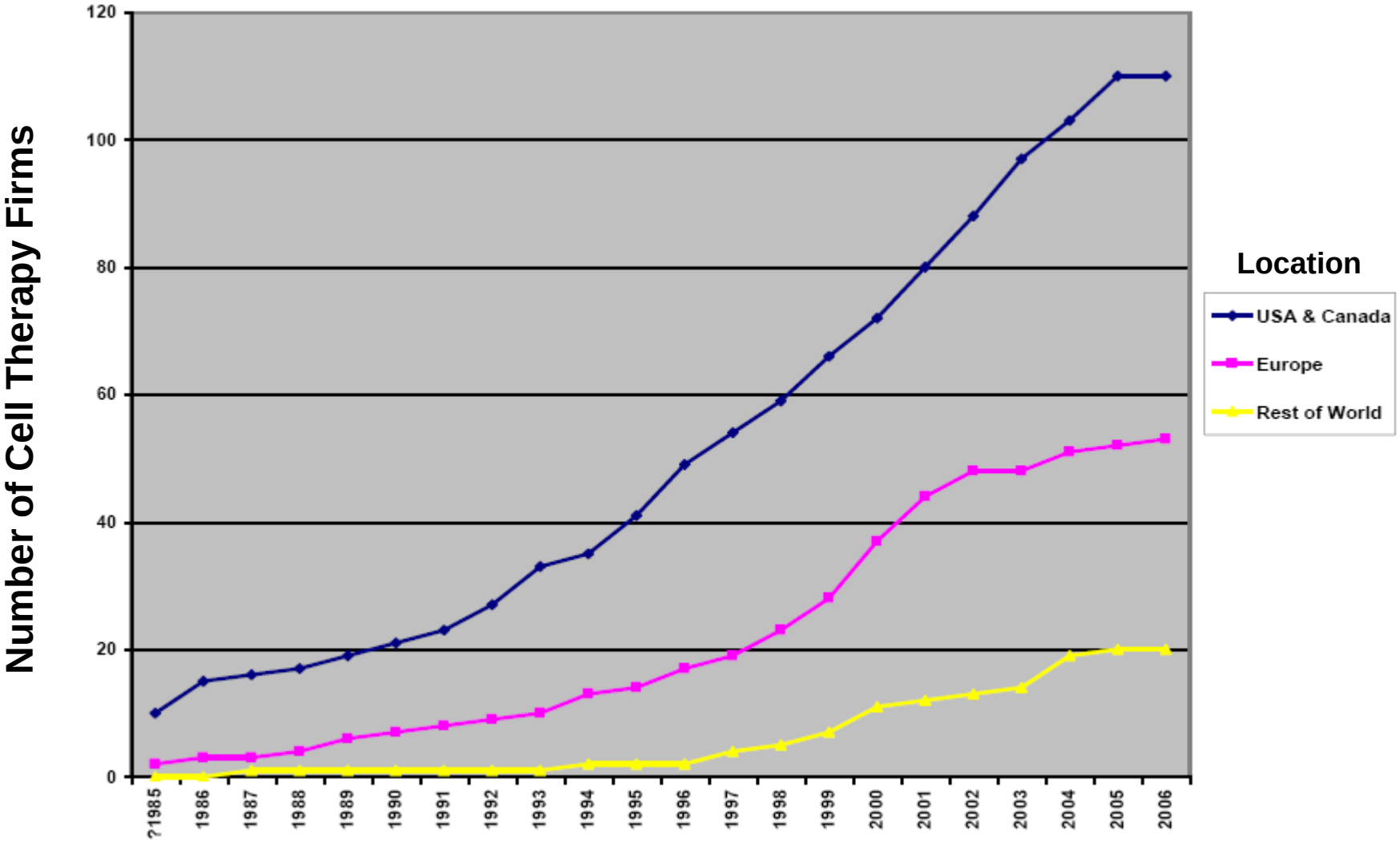
List | By Topic | On a Map | Search Details

+ Show Display Options Download Subscribe to RSS

☑ Include only open studies ☑ Exclude studies with unknown status

Rank	Status	Study
1	Recruiting	A Safety and Efficacy Study of INTEGRA® Dermal Regeneration Template for the Treatment of Diabetic Foot Ulcers **Condition:** Foot Ulcer, Diabetic **Interventions:** Device: Integra® Dermal Regeneration Template; Other: Conventional Wound Therapy
2	Recruiting	Tissue Engineering for Hair Follicle Regeneration **Conditions:** Tissue Engineering; Hair Follicle Regeneration **Intervention:** Behavioral: Tissue engineering for hair follicle regeneration
3	Not yet recruiting	Bone Quality and Quantity Following Guided Bone Regeneration **Condition:** Alveolar Ridge Augmentation **Intervention:**
4	Recruiting	Periodontal Tissue Regeneration Using Autologous Periodontal Ligament Stem Cells **Condition:** Periodontal Pocket

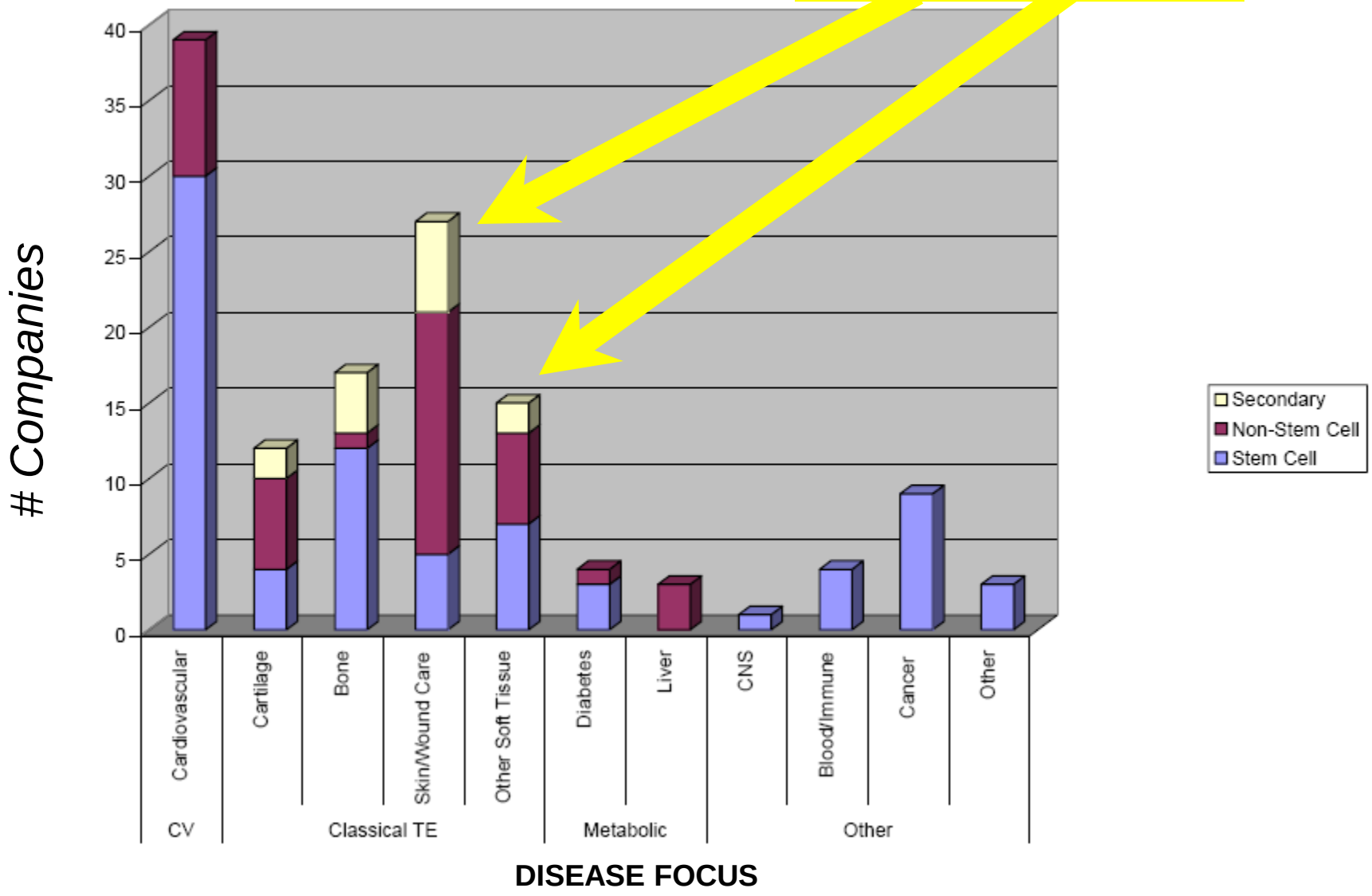
Number of Regenerative Medicine Companies Are Growing



SOURCE:
Martin P et al. The Commercial Development of Cell Therapy – Lessons for the Future? Survey of the Cell Therapy Industry and the Main Products in Use and Development. *University of Nottingham Institute for Science and Society Report*, April 2009.

> 100 Regenerative Medicine Products are in Clinical Development

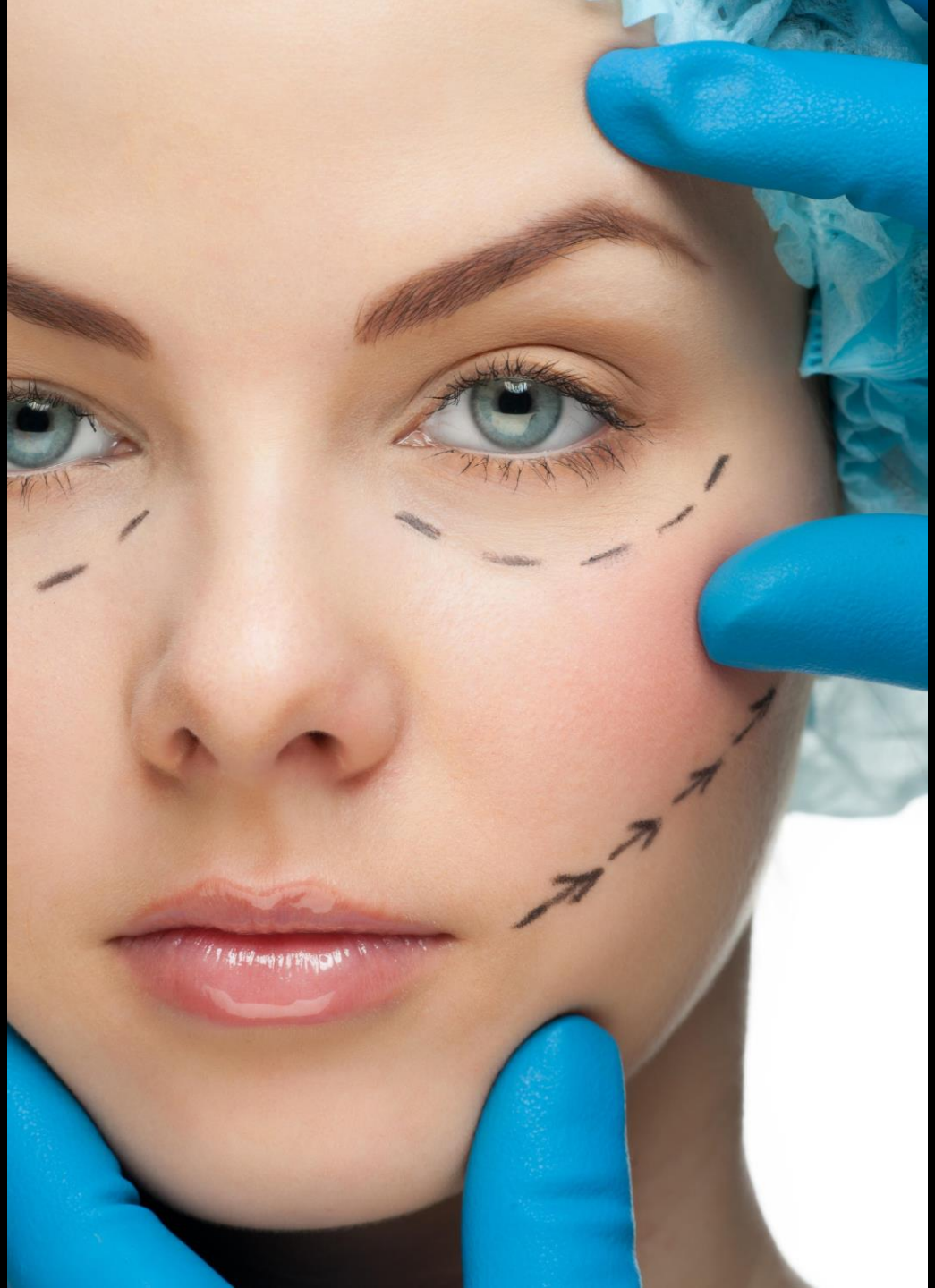
Top 3 Applications: Cardiovascular, Wound healing, Bone



Source: Martin P et al. The Commercial Development of Cell Therapy – Lessons for the Future? *University of Nottingham Institute for Science and Society Report*, April 2009.

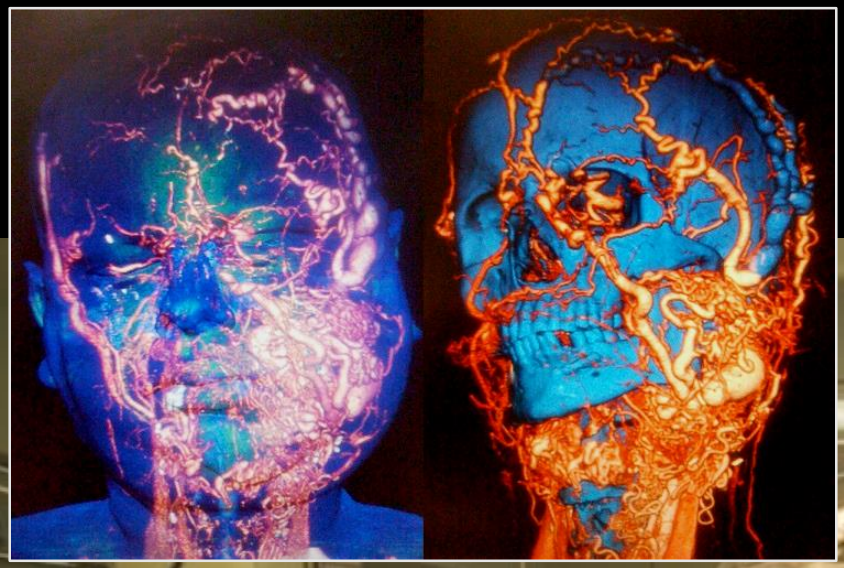
Plastic and Reconstructive Surgery

WILLIAM W. LI, M.D.



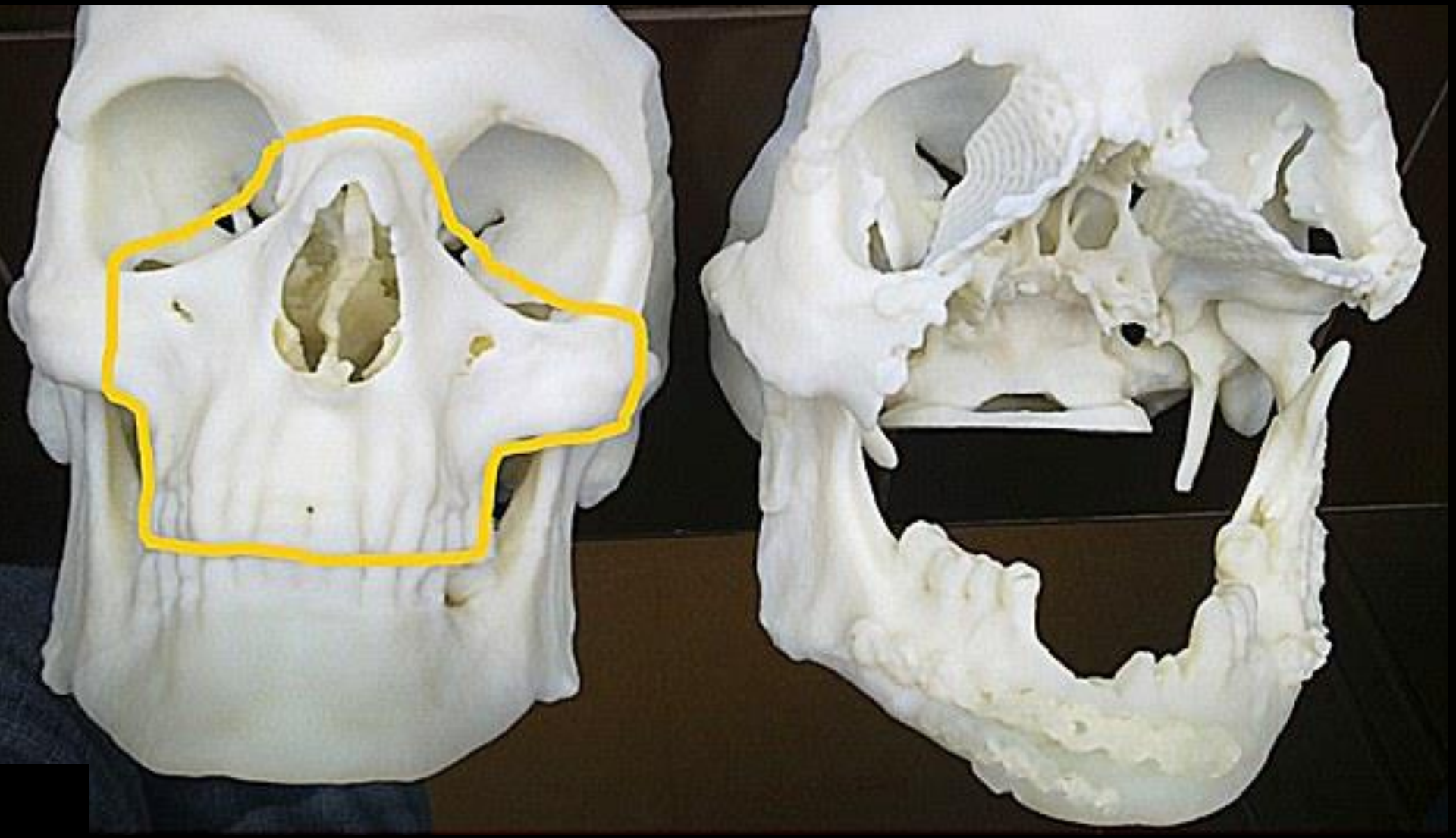
WILLIAM W. LI, M.D.

Complex tissue reconstruction



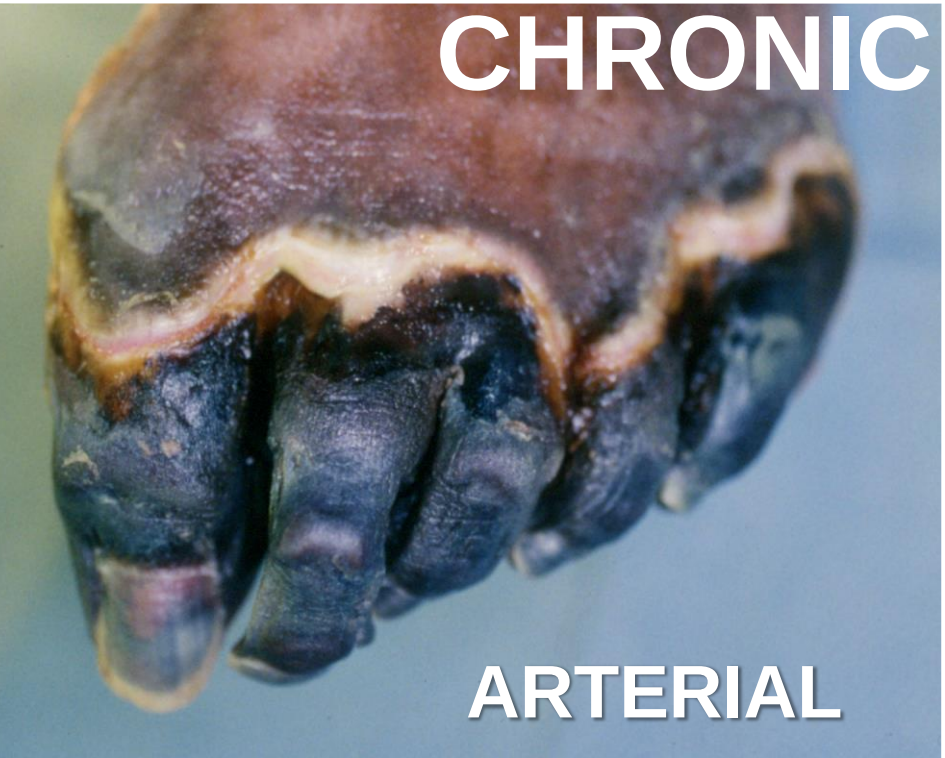
WILLIAM W. LI, M.D.

Complex tissue reconstruction



Dehiscence of incisions

CHRONIC WOUNDS



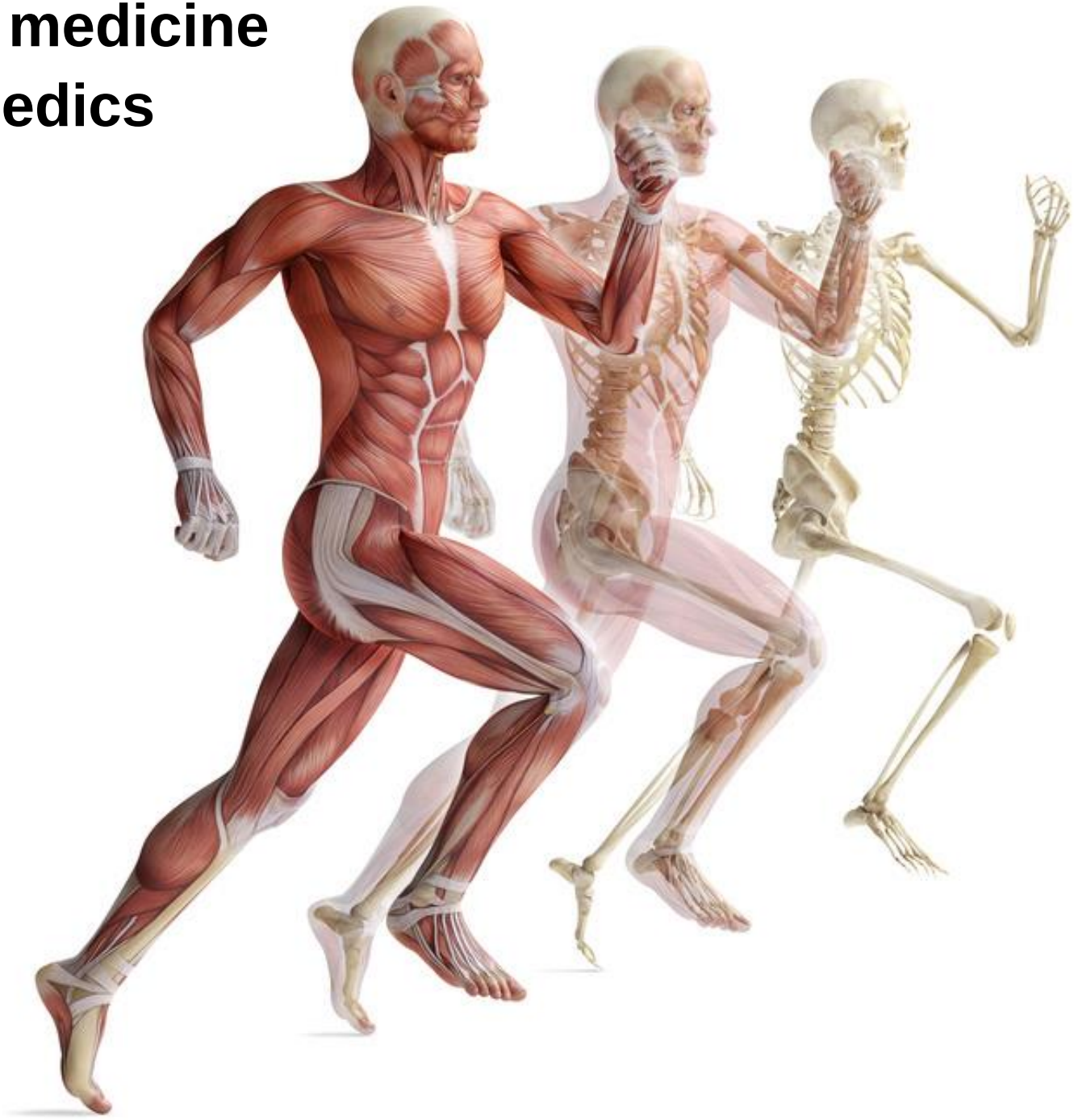
WILLIAM W. LI, M.D.

Burn injury

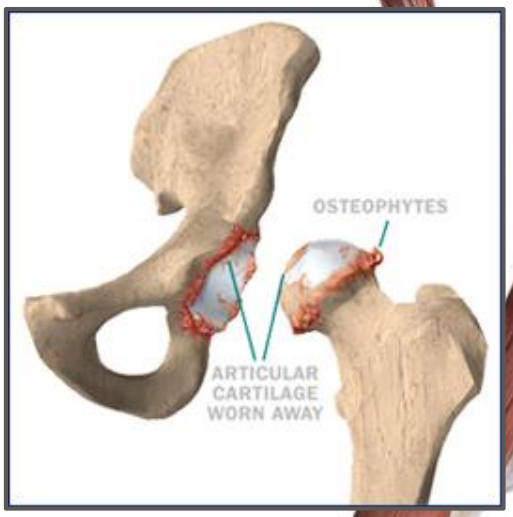
Bowel anastomoses

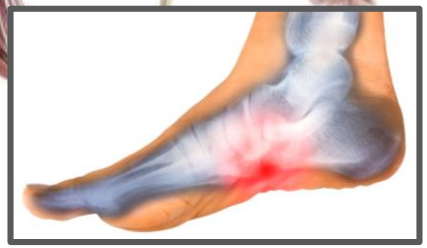
WILLIAM W. LI, M.D.

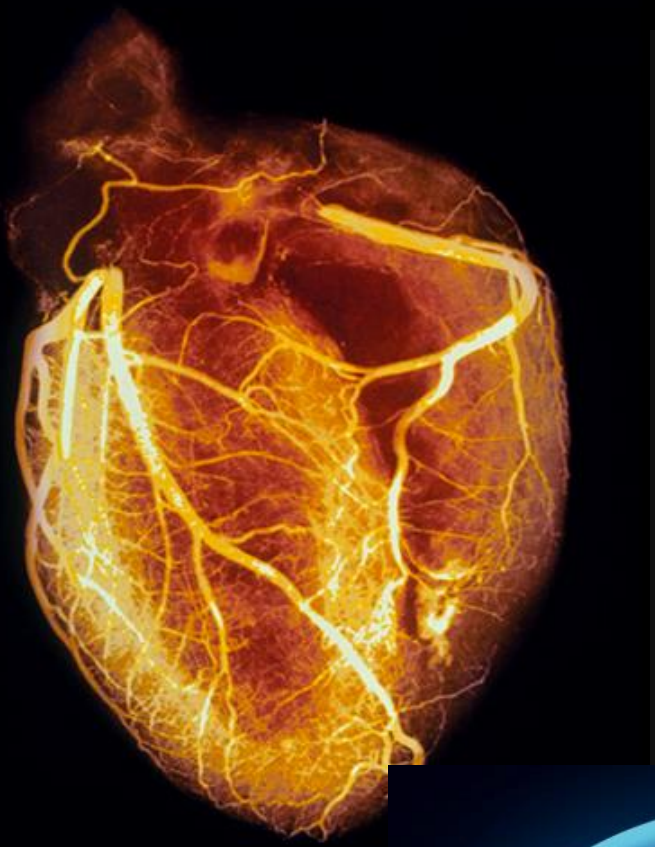
Sports medicine
Orthopedics

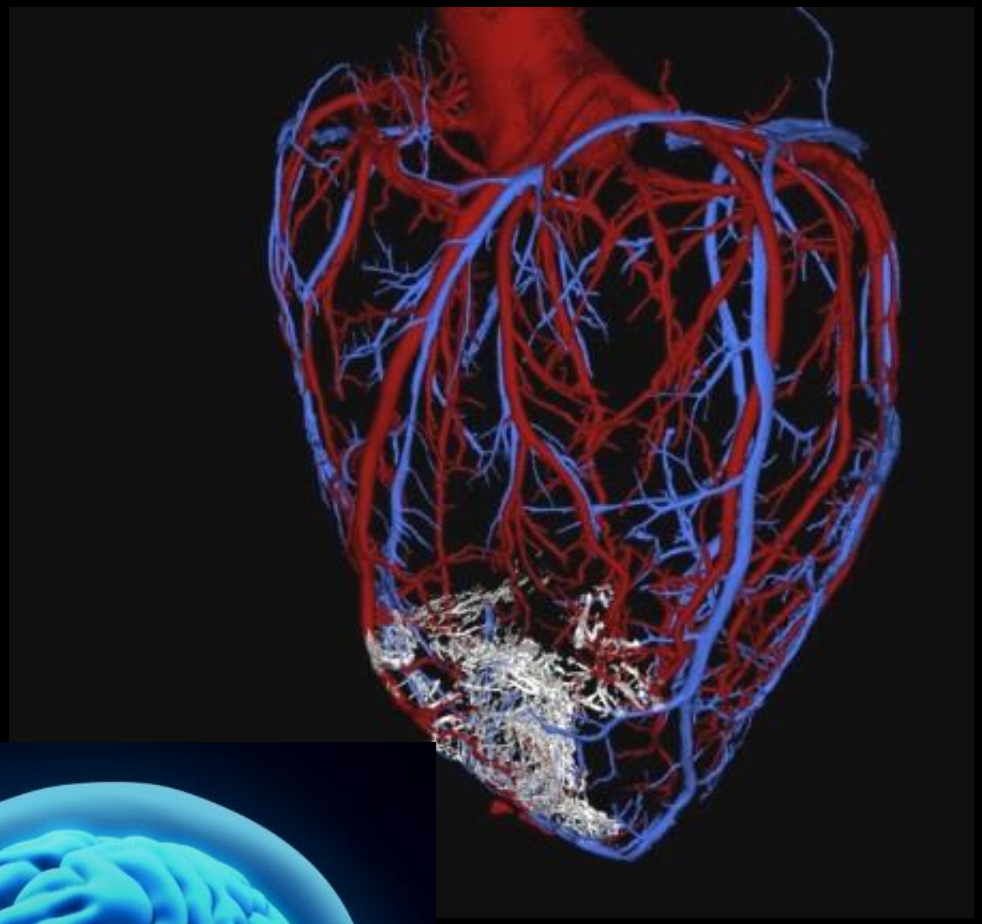


Sports medicine
Orthopedics

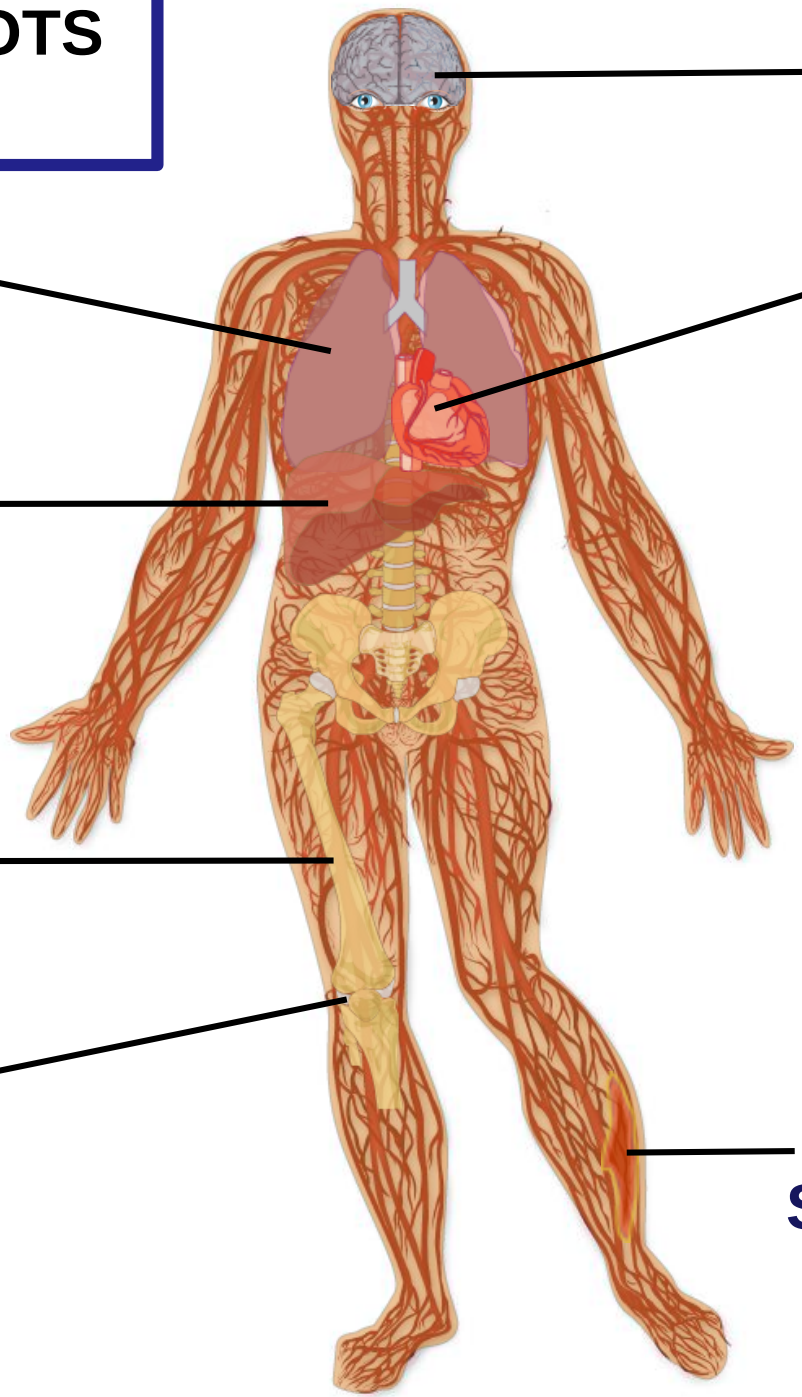








MULTIPLE SHOTS ON GOAL:



Goal:

Better healing

Better repair

“The best way to predict the future is to invent it”

— Richard P. Feynman

Nobel Laureate 1965

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

Lonnie E. Paulos, MD

Orthopedic Surgeon

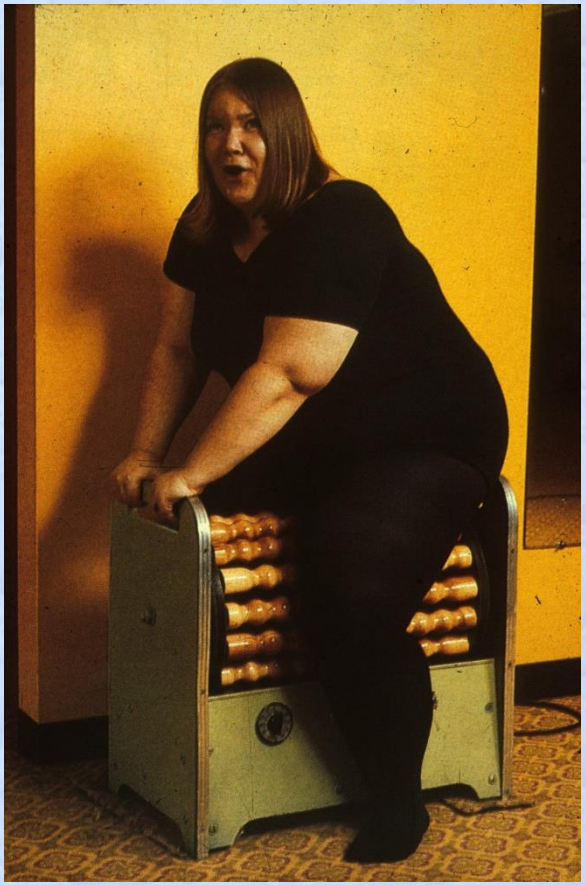
Salt Lake City, Utah

MiMedx

And
Musculoskeletal Applications

Musculoskeletal Applications

- Reduce scar tissue formation
- Accelerate healing



Historically

- Allograft tissues
- Fibrin clotting
- Native cell cultures

New Frontiers

- Platelet rich plasma (PRP)
- Electro-magnetic pulsing
- Stem Cells
- Amniotic by-products

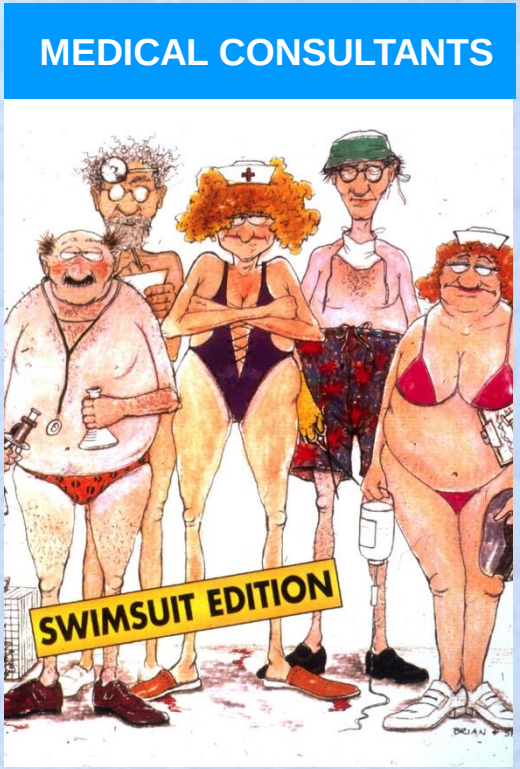
Obstacles

- FDA processes
- Cost
- Lack of scientific research

Solution

- Multi-center, controlled studies
- Peer reviewed publications
- Allograft vs. Autograft sources
- Unique solutions to cost

- Early into market
- Experienced medical consultants
- Intellectual property strength
- Complimentary products
  - Collagen
  - Amnion
- Less expensive stem cell stimulation



Applications

- Ligament
  - Replacement; augmentation
- Tendon
  - Repair
- Nerve
  - Repair; decompression; transposition

No Limits

Where are we now

6 case studies

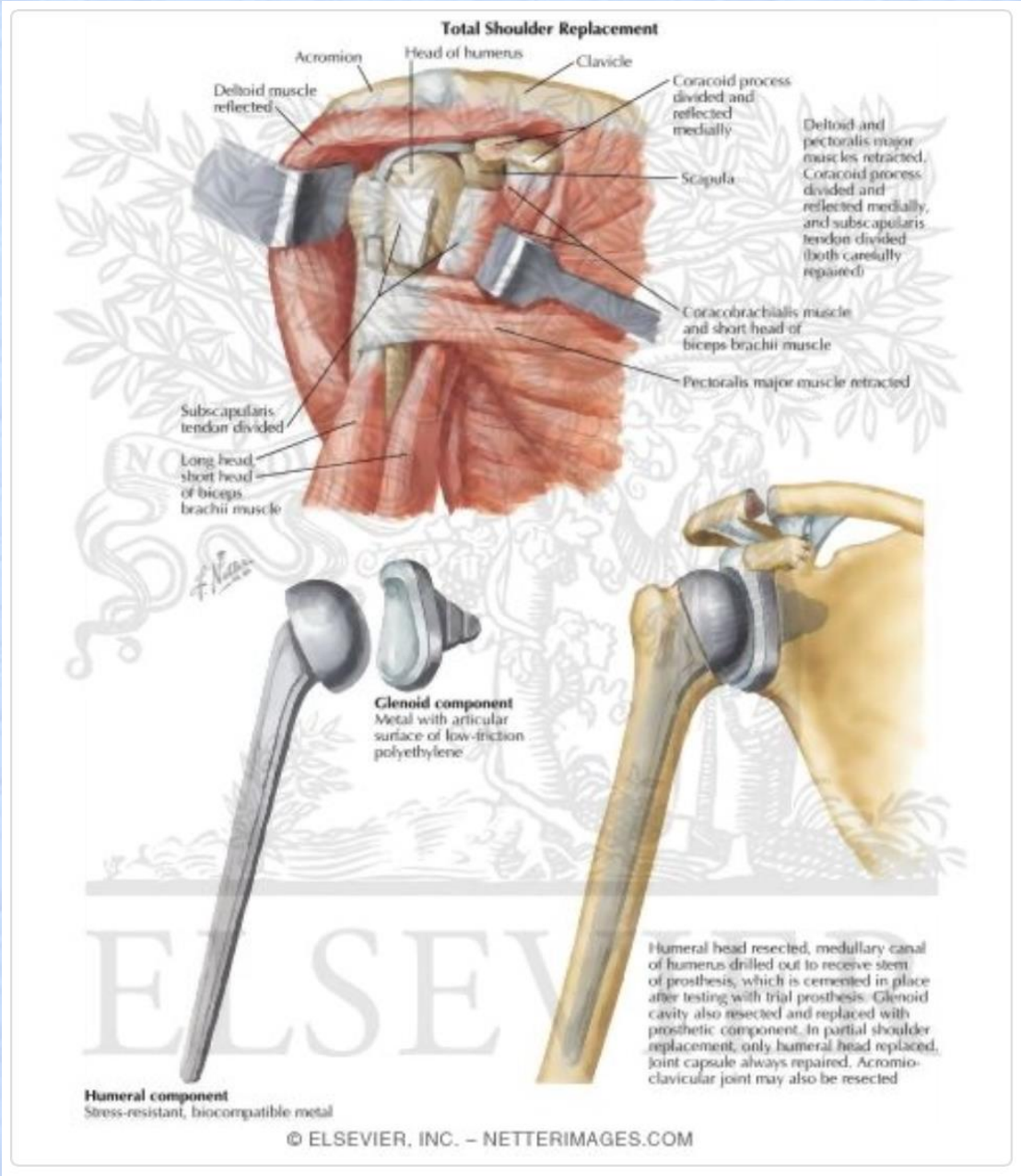
Case 1
42 y.o. male

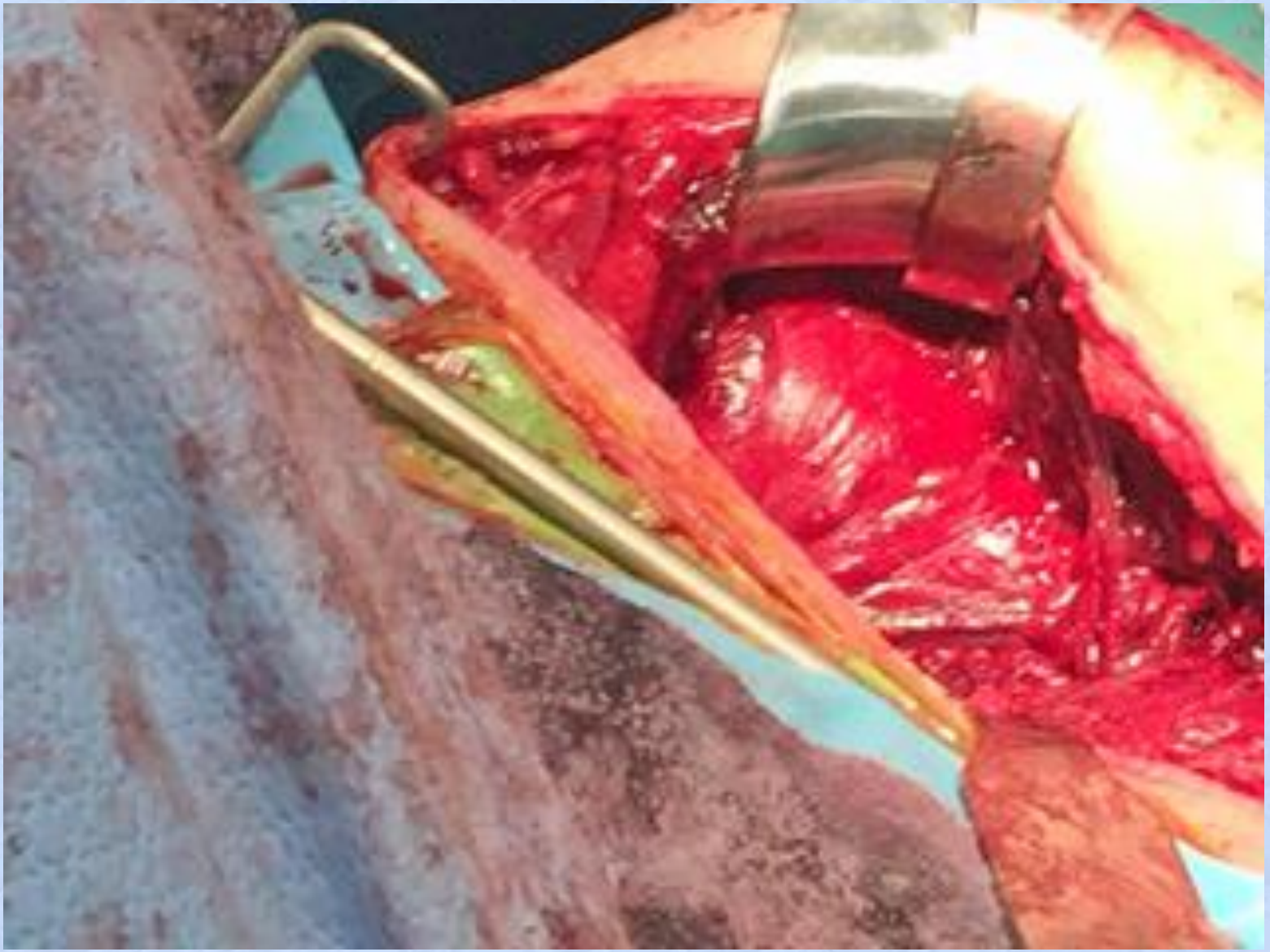
.

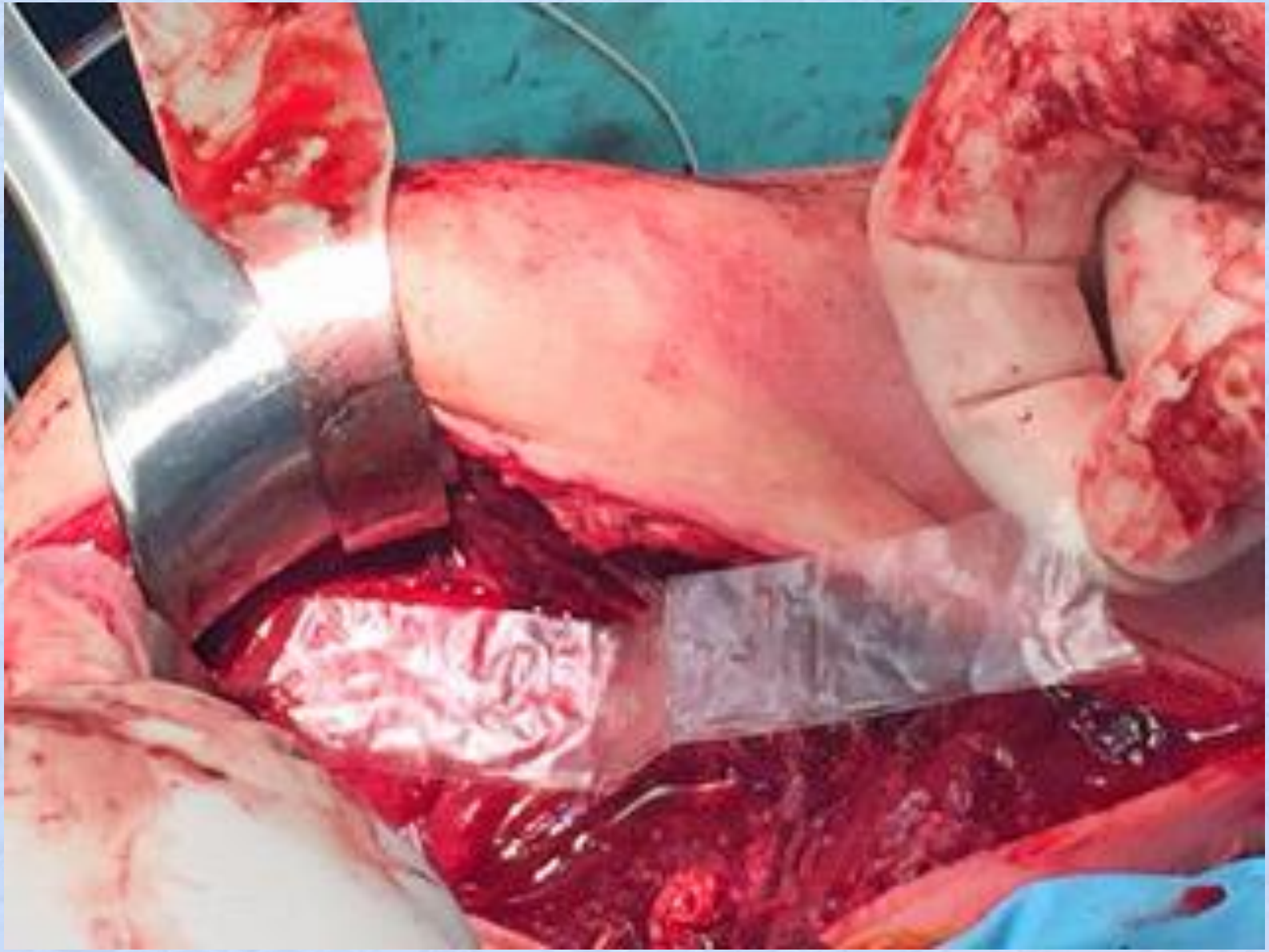
- Multiple open and arthroscopic stabilization procedures
- Severe OA of the shoulder
- Severe arthrofibrosis in all planes

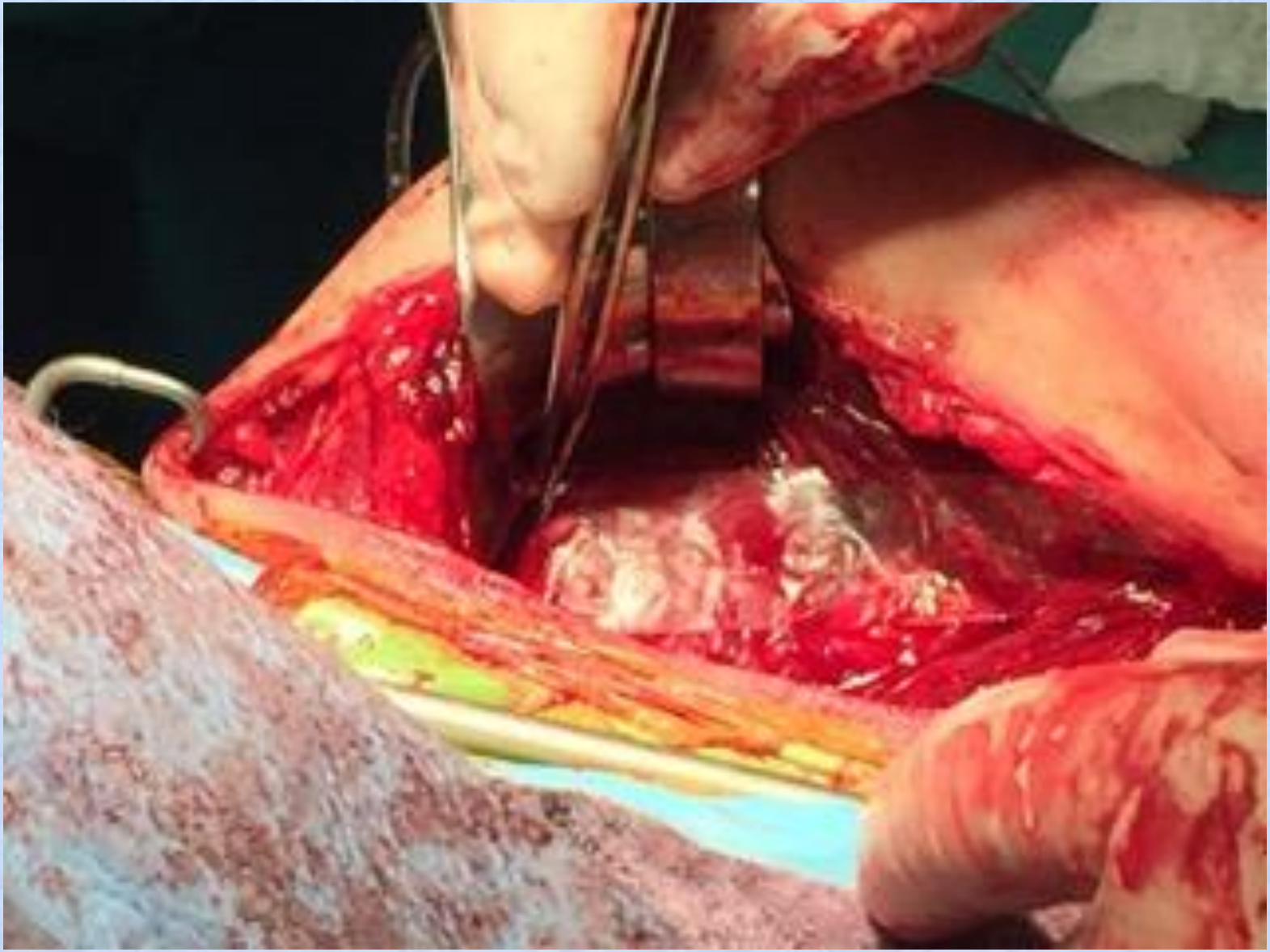
Surgery

- Total shoulder replacement with Pectoralis transfer to reconstruct the attenuated Subscapularis muscle tendon.
- AmnioFix placed under the deltoid, anterior, posterior and lateral to help prevent recurrence of arthrofibrosis.


Total Shoulder Replacement
Acromion
Head of humerus
Clavicle
Deltoid muscle reflected
Coracoid process divided and reflected medially
Scapula
Deltoid and pectoralis major muscles retracted. Coracoid process divided and reflected medially, and subscapularis tendon divided (both carefully repaired)
Coracobrachialis muscle and short head of biceps brachii muscle
Pectoralis major muscle retracted
Subscapularis tendon divided
Long head
short head of biceps brachii muscle
Glenoid component
Metal with articular surface of low-friction polyethylene
Humeral head resected, medullary canal of humerus drilled out to receive stem of prosthesis, which is cemented in place after testing with trial prosthesis. Glenoid cavity also resected and replaced with prosthetic component. In partial shoulder replacement, only humeral head replaced. Joint capsule always repaired. Acromioclavicular joint may also be resected
Humeral component
Stress-resistant, biocompatible metal
© ELSEVIER, INC. – NETTERIMAGES.COM







Post-op

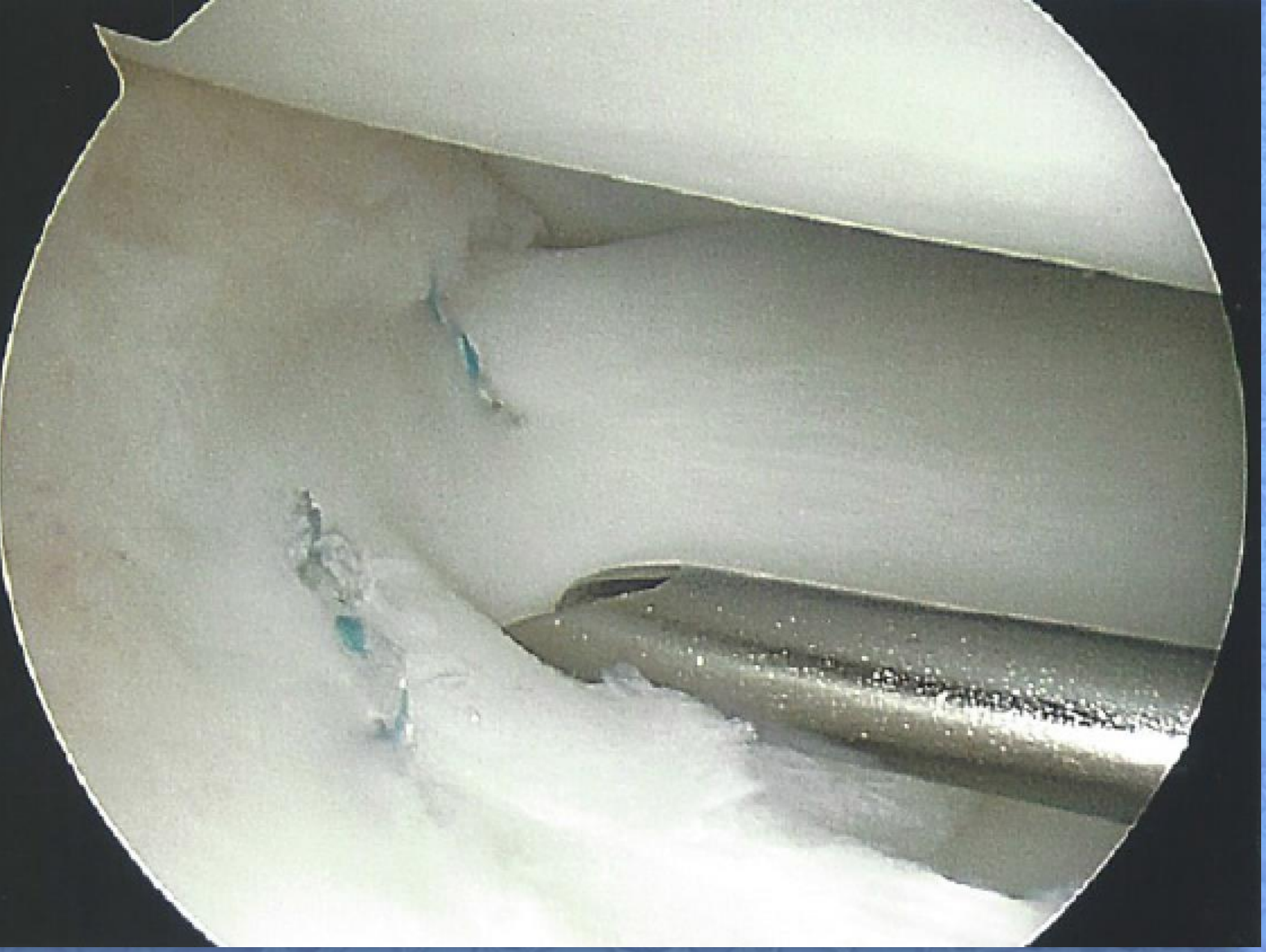
- Amazingly pain free on the first post-op day.
- He regained motion very fast and left formal PT after 3 weeks.
- One year post-op - pain free, stable shoulder.

Case 2
17 y.o. High School Quarterback

- Patient suffered twisting injury playing fall football, 4 months before evaluation.
- Exam and MRI revealed a mid-level lateral radial tear with extensive extension horizontally both anterior and posterior.

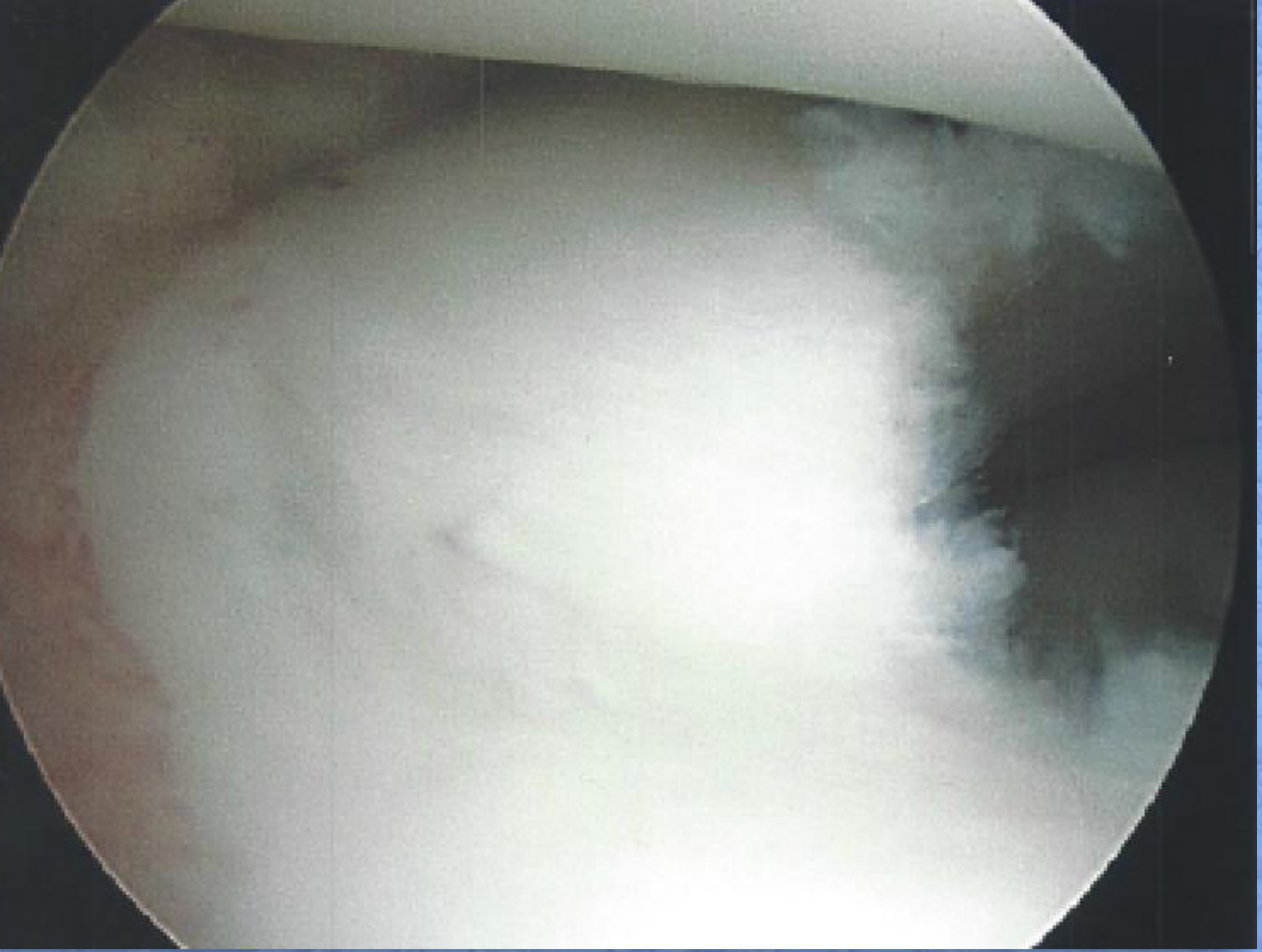
Surgery

- Arthroscopic lateral meniscus repair using multiple vertical, inside-out sutures.
- AmnioFix Sports Med 0.5 cc x 1 at 3rd post-op week.



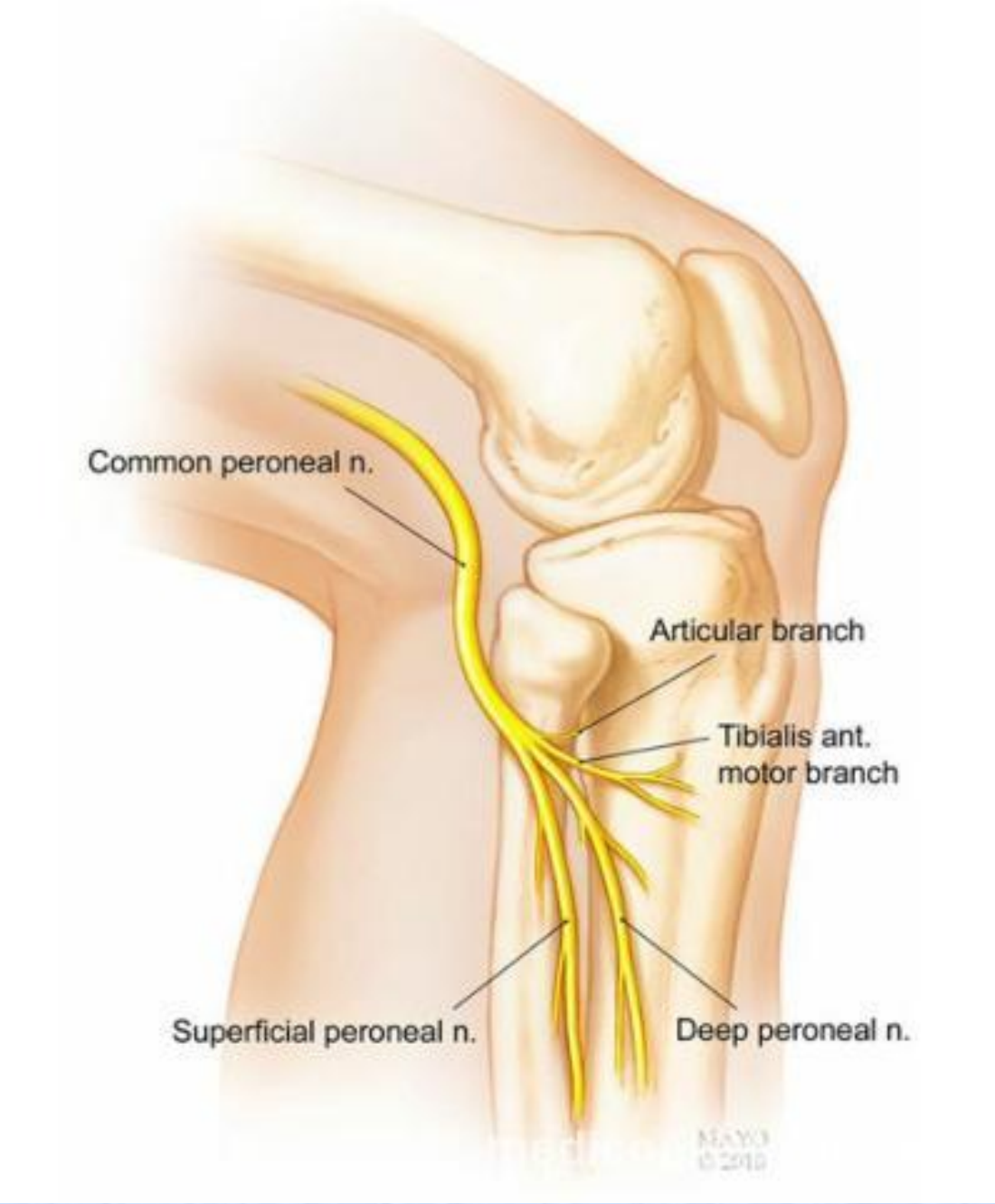
Post-op

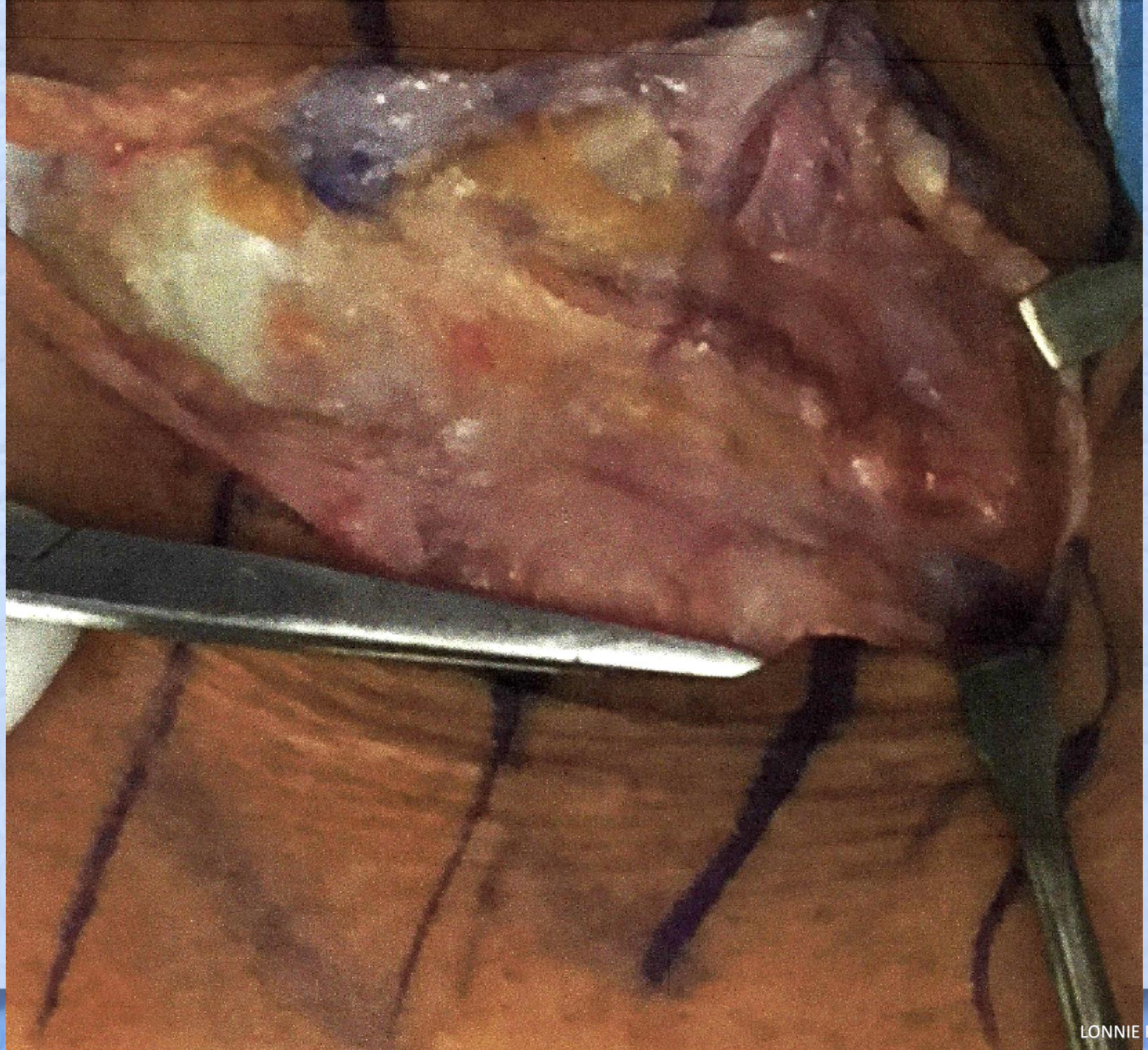
- Second look arthroscopy 5 months post-op was performed. It showed excellent fill-in of the radial tear but only partial healing of the horizontal-anterior component.
- Patient was already playing football without previous symptoms. Plan is to watch knee closely and inject with AmnioFix Sports Med x3 and if possible, return at the end of the season to further repair if needed.



Case 3
69 y.o. male

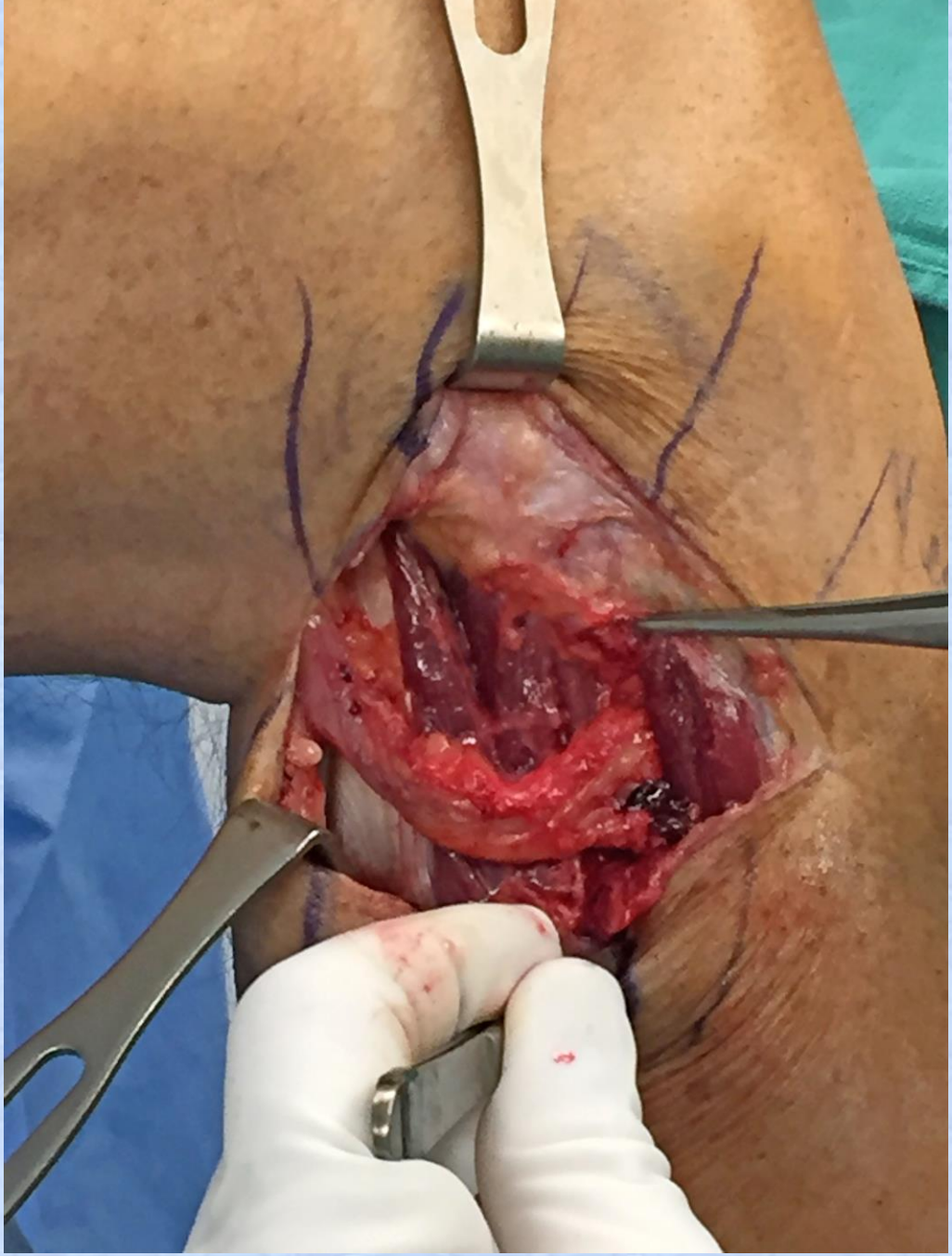
- 5 years of severe peroneal nerve pain after surgical attempt to release tissue pressure around it.


Common peroneal n.
Articular branch
Tibialis ant.
motor branch
Superficial peroneal n.
Deep peroneal n.



LONNIE PAULOS, M.D.

LONNIE PAULOS, M.D.



1 Mo. Post-op

- Pain free for first time in 5 yrs.
- Muscle strength returning

Case 4
38 y.o. male

- Ruptured Achilles tendon playing basketball.

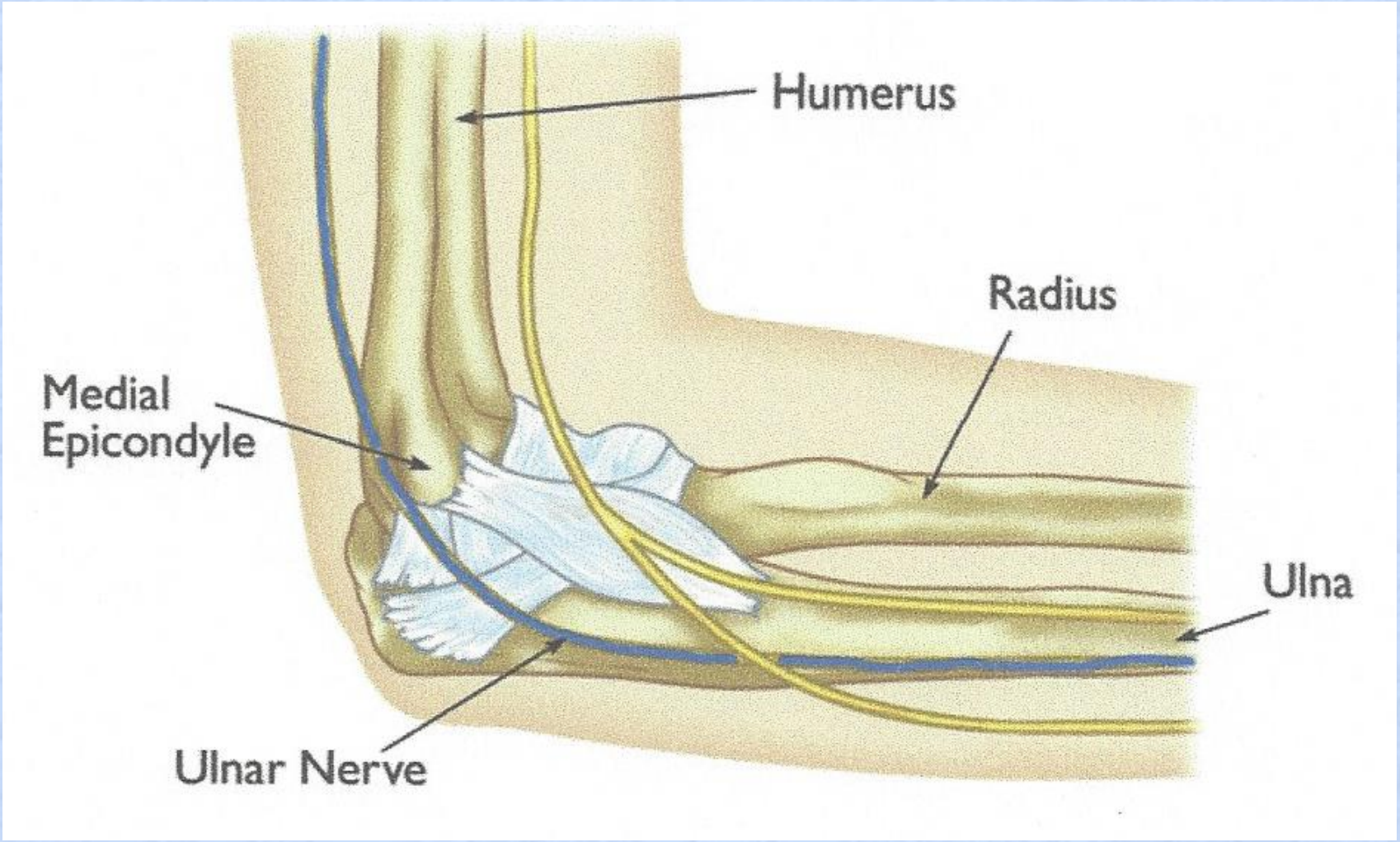

Ruptured
Achilles tendon

Surgery

- Repaired end to end
- Covered with AmnioFix to prevent skin adhesions

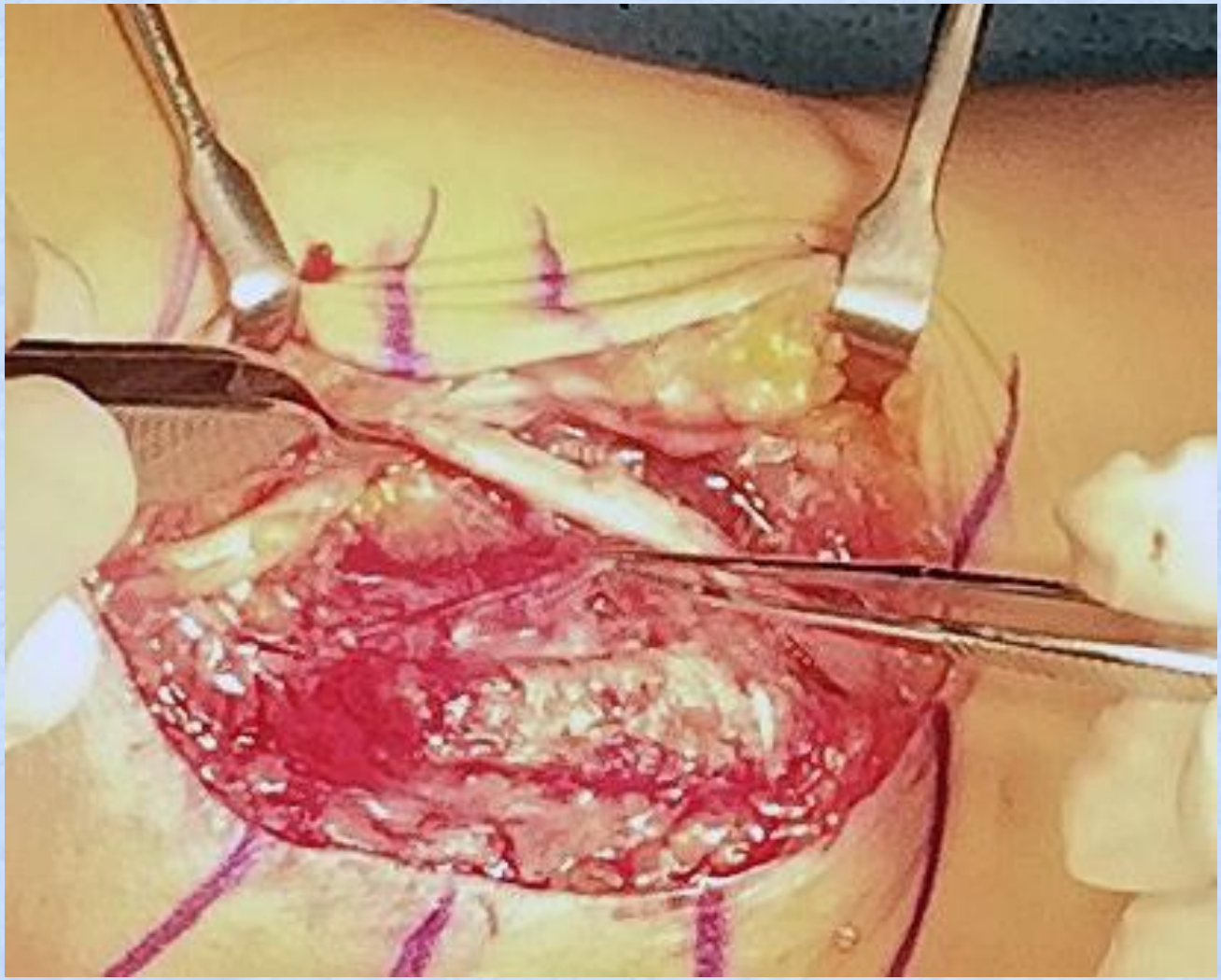
Case 5
38 y.o. female

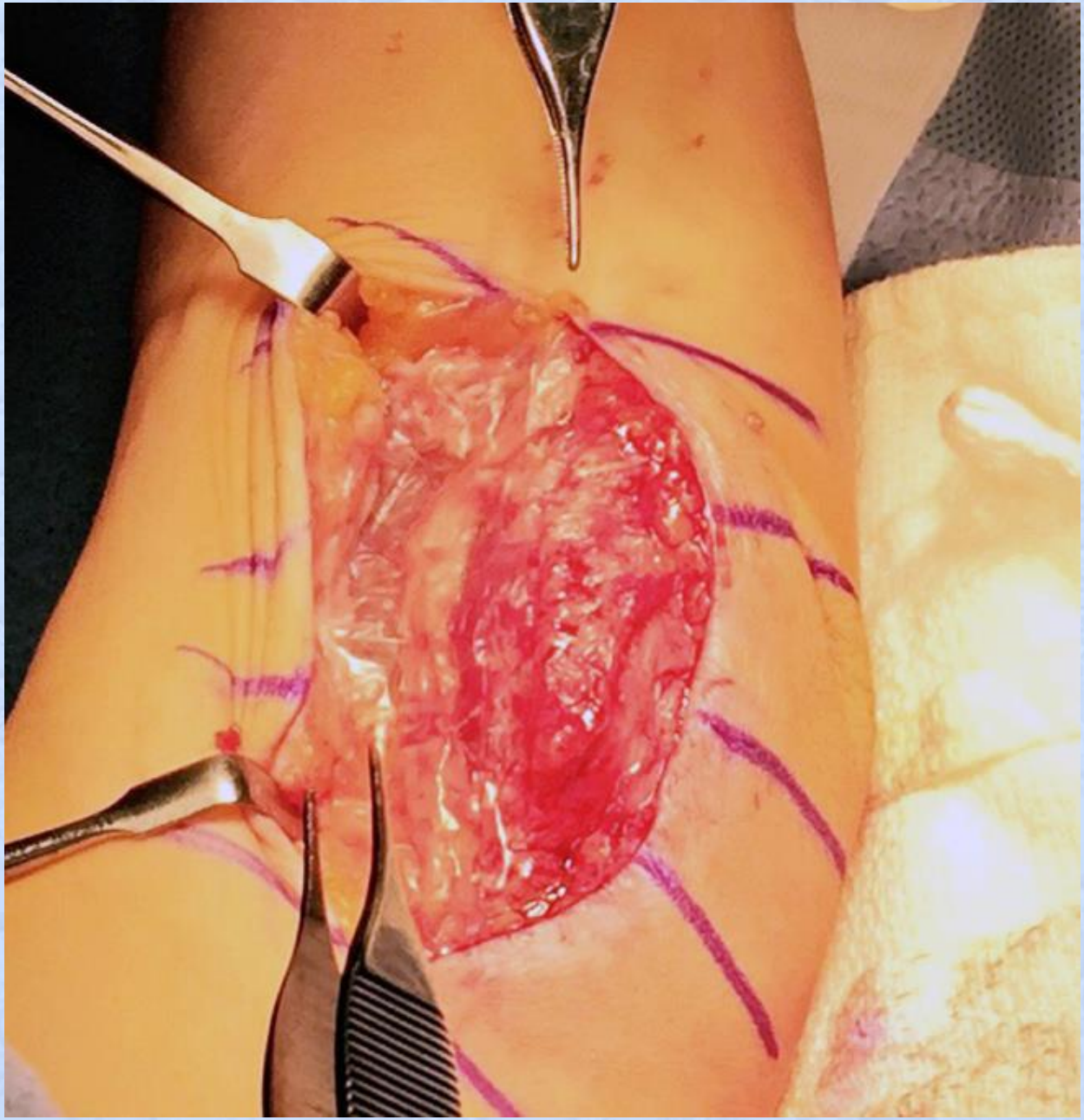
- Left elbow and hand pain secondary to ulnar nerve neuritis with failure of two previous surgical releases.

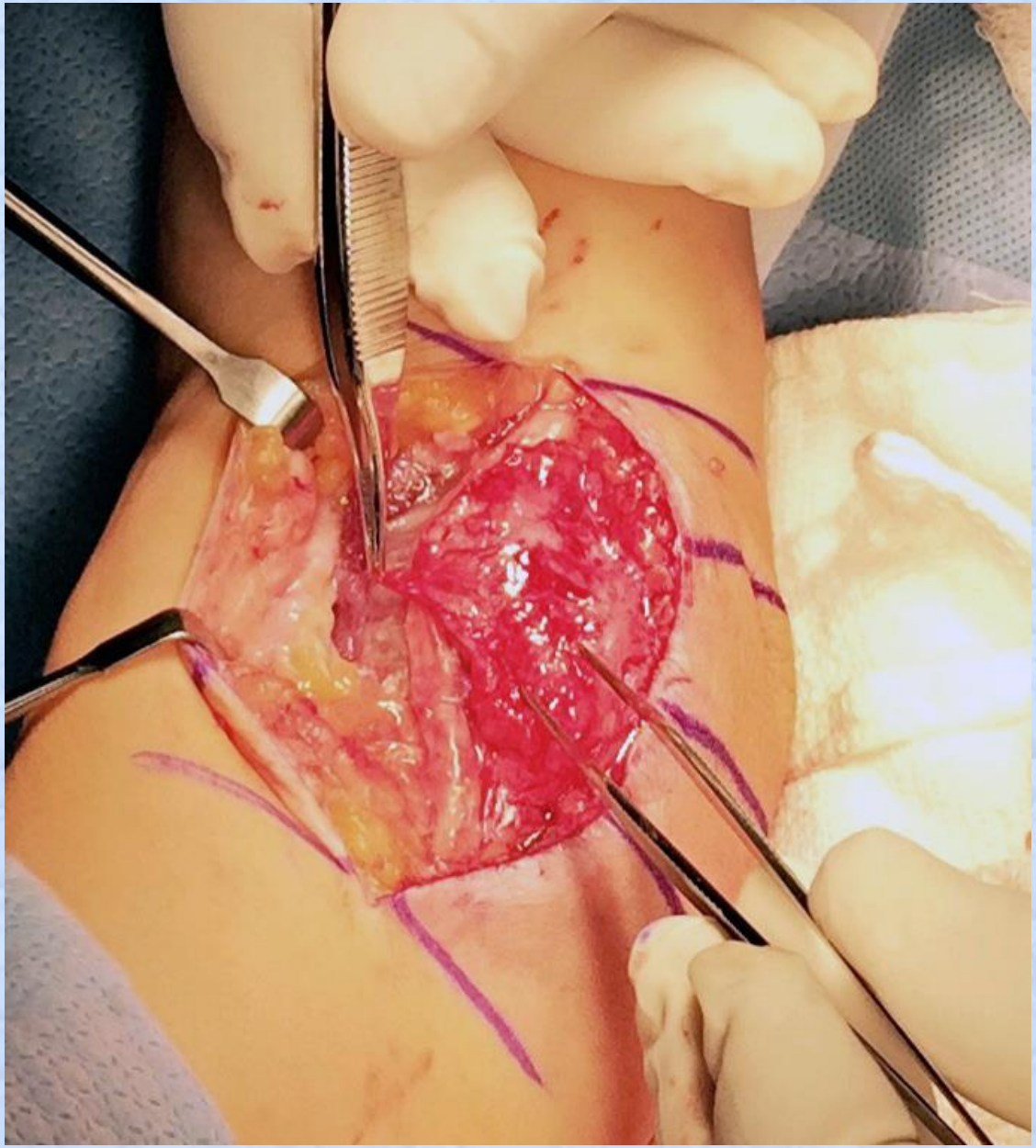

Humerus
Radius
Medial
Epicondyle
Ulna
Ulnar Nerve

Surgery

- Release and transposition to forearm position and covered with AmnioFix.





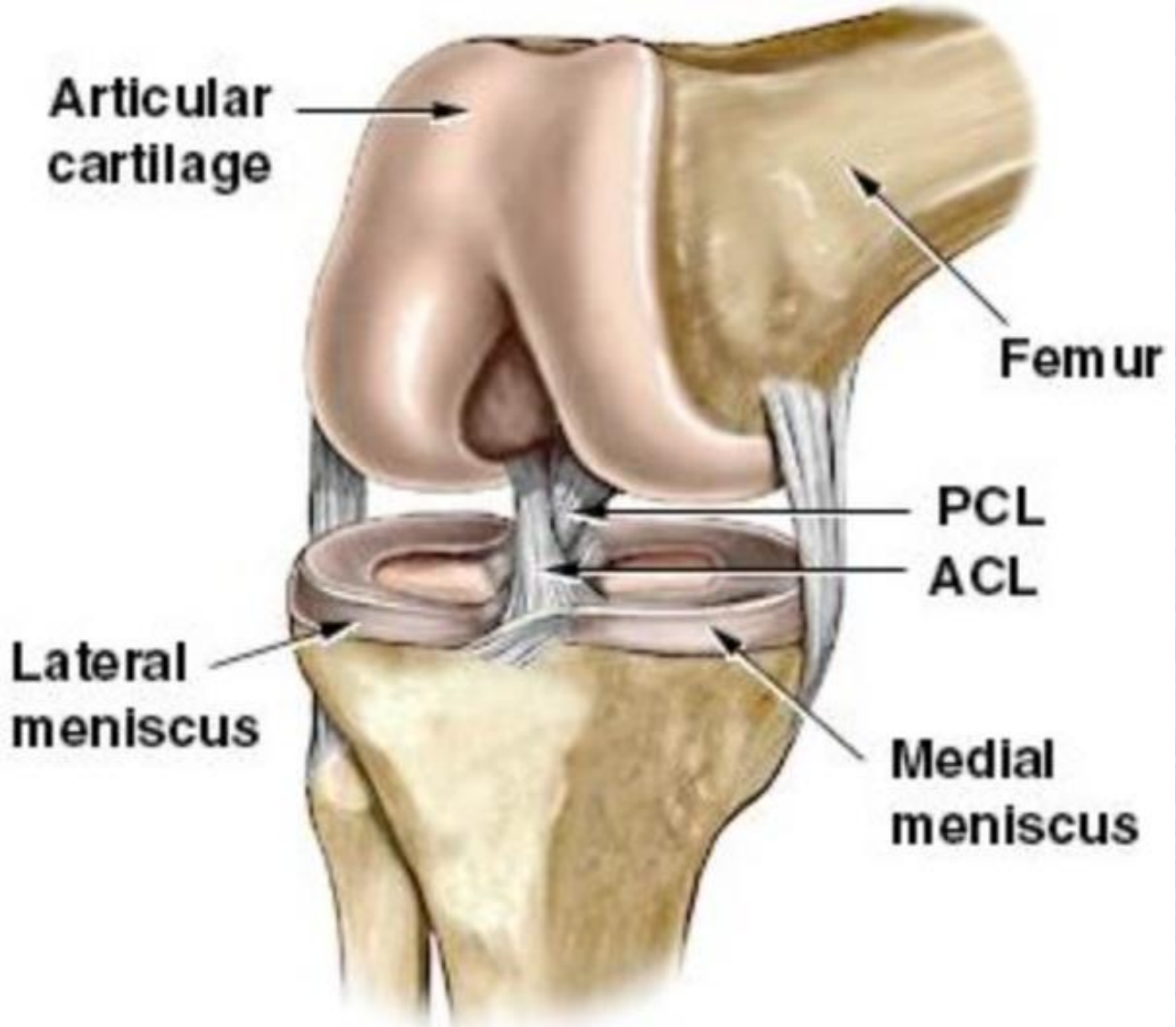


3 Mo. Post-op

- Full range of motion
- No pain
- Increased sensation

ACL Case 6
32 y.o. Male

- The patient presented with chronic ACL instability from a football injury 17 years earlier.


Articular cartilage
Femur
PCL
ACL
Lateral meniscus
Medial meniscus

Surgery

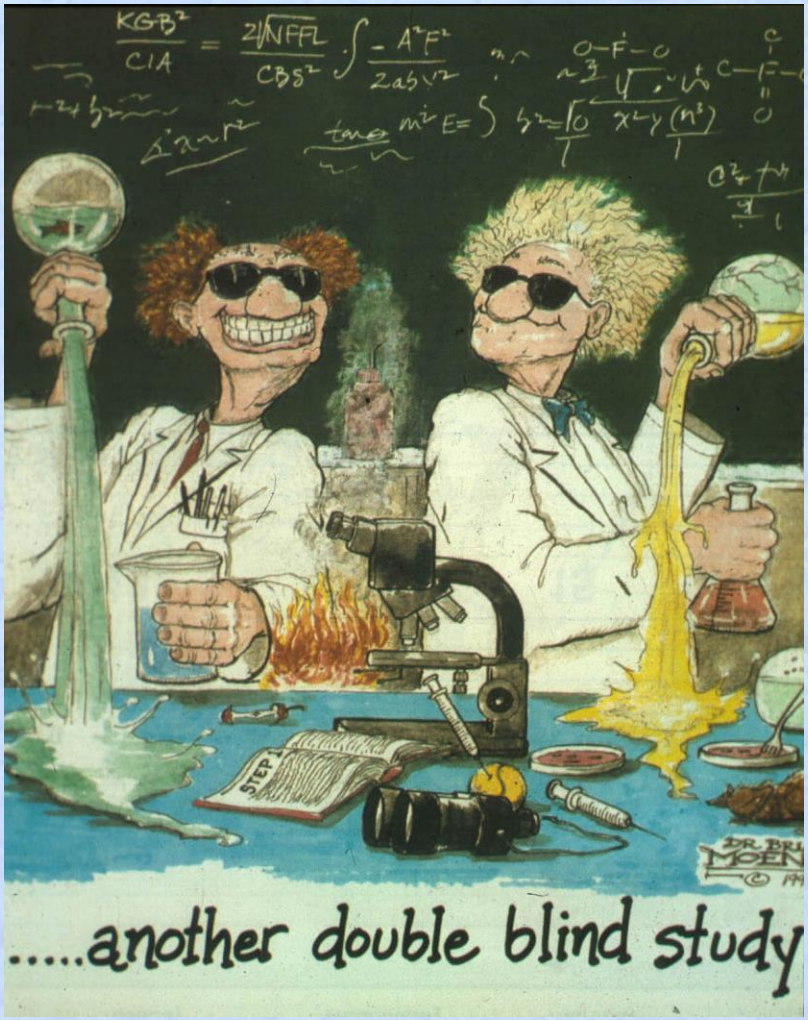
- The patient underwent an ACL reconstruction using a Bone-Tendon-Bone graft from the contralateral knee.
- Partial lateral menisectomy.
- Multi-compartment chonroplasty.
- AmnioFix was placed under the remaining patella tendon to prevent adhesions to the anterior tibia.

Post-op

- The patient regained his motion rapidly and his patella and it's tendon remained mobile through-out his recovery.
- 9 months - The knee was stable
- Active in his sports of choice

250,000 BTB ACL's/yr!

Where are we headed?



Thank You

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

ANALYST DAY

October 13, 2015

Grand Hyatt, New York, NY

USAGE OF EPIFIX® IN PLASTIC AND RECONSTRUCTIVE SURGERY

John Ko, M.D., Ph.D., F.A.C.S.

Assistant Clinical Professor
Icahn School of Medicine at Mount Sinai
Division of Plastic Surgery
New York, NY

Section Chief
James J. Peters VA Medical Center
Department of Surgery
Bronx, NY

Assistant Clinical Professor
Columbia University
College of Physicians and Surgeons
Department of Surgery
New York, NY

Specialist in Wound and Hyperbaric Medicine
Department of Surgery and Medicine
NY Presbyterian/Hudson Valley Hospital
Cortlandt, NY

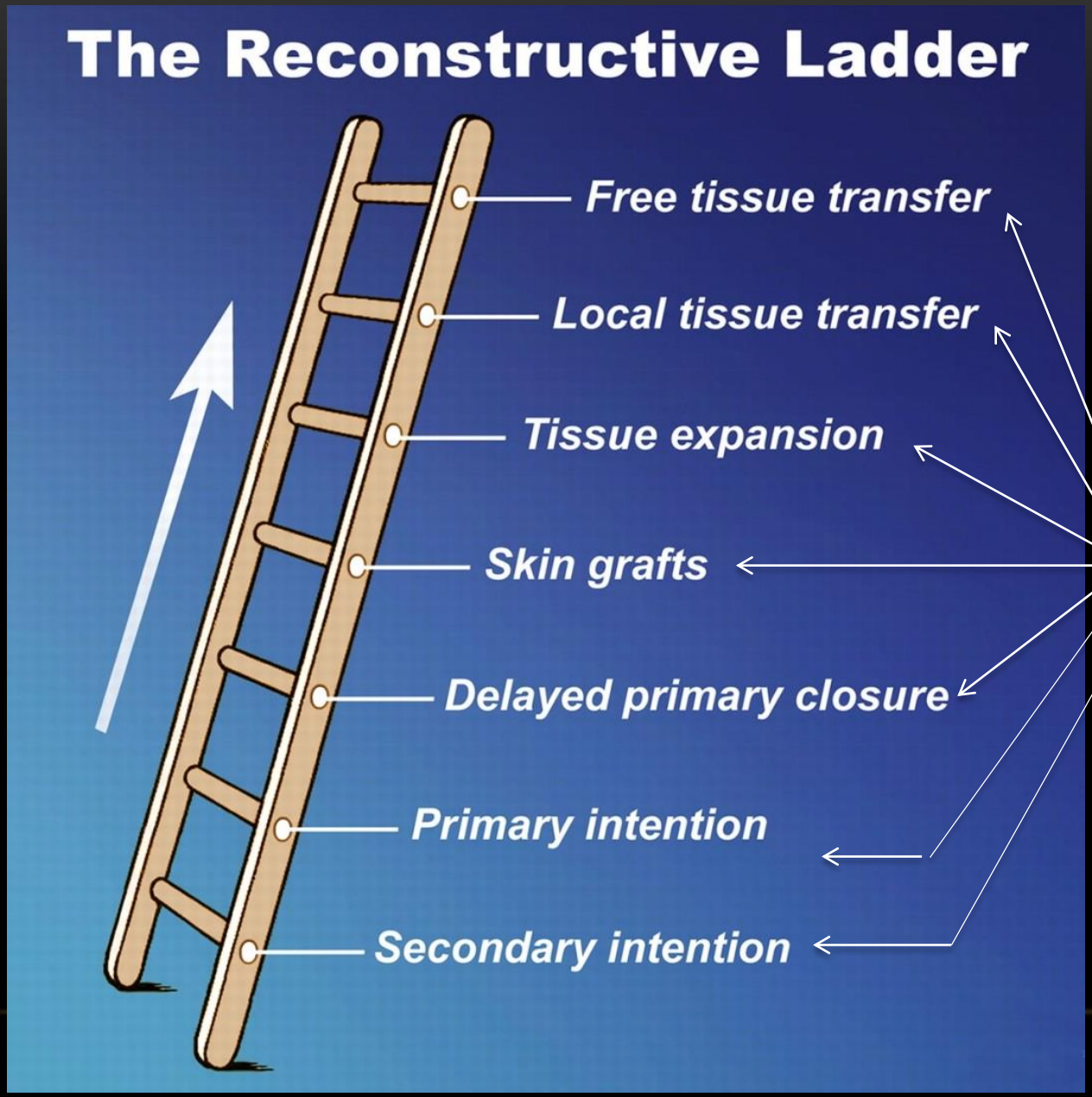
Medical Director
Wound Care Services
Elmhurst Hospital Center
NYC Health and Hospital Corp.
Elmhurst, NY

Introduction

- My Practice in Plastic Surgery
  - Academic and private practice settings
    - 50% Reconstruction
    - 25% Cosmetics
    - 25% Hand
- Biophysicist trained in cellular receptor signaling
- My beliefs
  - Surgical success is based on healing
    - The better the healing, the better the outcome
  - Regenerative Medicine can improve outcome

Introduction of Advanced Tissue Therapies

- The Evolution of Technology
  - Synthetics
  - Xenografts
  - Allografts
  - Living Fibroblasts and Cultured Cells
  - Amniotic Membrane Technology



JOHN KO, MD, PHD, FACS 2015

LOWER EXTREMITY WOUND

The patient is a 67 year old man with diabetes and 6 months history of non healing chronic right heel pressure ulcer.

Initiated EpiFix treatment weekly for 7 weeks. Wound completely healed in 2 months.

LOWER EXTREMITY WOUND

Pre - treatment

s/p 4th EpiFix treatment

LOWER EXTREMITY WOUND

s/p 7th EpiFix treatment

LOWER EXTREMITY WOUND

SCALP SKIN GRAFT FAILURE

54 y/o male with head trauma and scalp reconstruction with skin graft, developed partial failure of skin graft.

Treated with three applications of EpiFix every week and healed in one month.

SCALP SKIN GRAFT FAILURE

Pre - treatment

s/p 1st treatment

SCALP SKIN GRAFT FAILURE

s/p 2nd treatment

6 week follow-up

SCALP SKIN GRAFT FAILURE

LAPAROTOMY INCISION DEHISCENCE

60 y/o male with PMHx of DM, diverticulitis, and HTN, s/p sigmoid resection for perforated diverticulitis, developed a non-healing chronic midline wound.

Treated with four applications of EpiFix every 2 weeks.

LAPAROTOMY INCISION DEHISCENCE

s/p 1st EpiFix treatment

s/p 2nd EpiFix treatment

LAPAROTOMY INCISION DEHISCENCE

s/p 3rd EpiFix treatment

s/p 4th EpiFix treatment

LAPAROTOMY INCISION DEHISCENCE

MIDLINE LAPAROTOMY DEHISCENCE

62 y/o male with PMHx of HTN, MI with stent placements, multiple abdominal surgeries, and over 40 years of cigarette smoking, presented for large ventral hernia repair.

Post op incisional dehiscence after one week.

Treated with negative pressure therapy for one month and three applications of EpiFix every two weeks.

MIDLINE LAPAROTOMY DEHISCENCE

s/p debridement

s/p negative pressure therapy

MIDLINE LAPAROTOMY DEHISCENCE

s/p 1st EpiFix treatment

s/p 2nd EpiFix treatment

JOHN KO, MD, PHD, FACS 2015

MIDLINE LAPAROTOMY DEHISCENCE

s/p 3rd EpiFix treatment

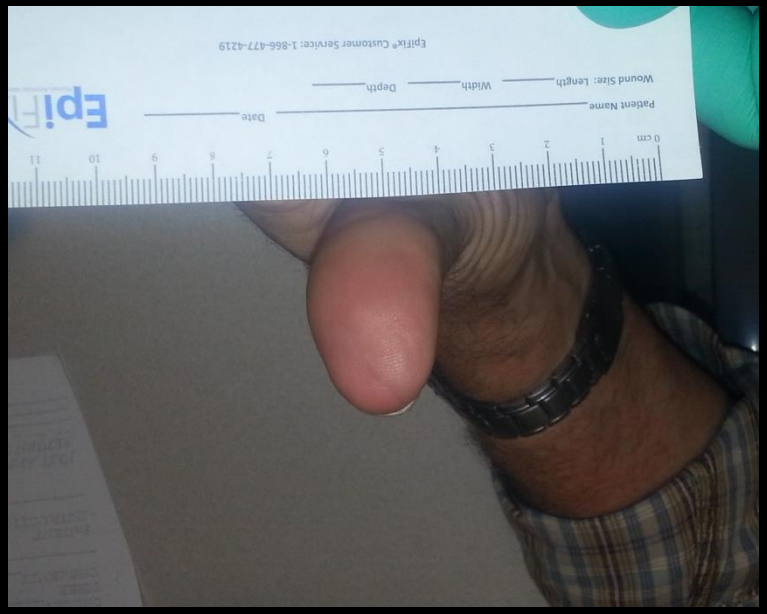
MIDLINE LAPAROTOMY DEHISCENCE

FINGERTIP CRUSH INJURY

A 67 year-old man with a traumatic table saw injury to his left thumb.

One application of EpiFix applied with complete healing in 2 weeks.

FINGER TIP CRUSH INJURY



RECONSTRUCTION OF SCALP FOLLOWING SCC RESECTION

A 74-year-old man with history of cardiac disease and smoking underwent resection of two large squamous cell carcinomas (SCC) of the left parietal scalp and left temple, resulting in a scalp defect of 33cm² and 20cm², respectively.

Bilayered dermal regenerative matrices were applied to both wounds after resection.

At 2.5 months post-operation, EpiFix was initiated to promote complete closure.

RECONSTRUCTION OF SCALP

Week 1 - s/p resection

Week 3 – silicone layer removal

RECONSTRUCTION OF SCALP

Week 4 – second silicone layer removed

Week 10 – 1st placement of EpiFix

RECONSTRUCTION OF SCALP

Week 12 - 2nd EpiFix placement

Week 16 – healed after 3rd EpiFix placement

RECONSTRUCTION OF SCALP

7 Months follow-up with complete closure

RECONSTRUCTION OF SCALP

THANK YOU

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AmnioFix® Applications in General and Colorectal Surgery

Emery A. Minnard MD
Surgical Oncology
West Jefferson Medical Center

Case Presentation

- 88 year old male with duodenal angiodysplasia causing GI bleeding presented with perforation after endoscopy.

Case Presentation

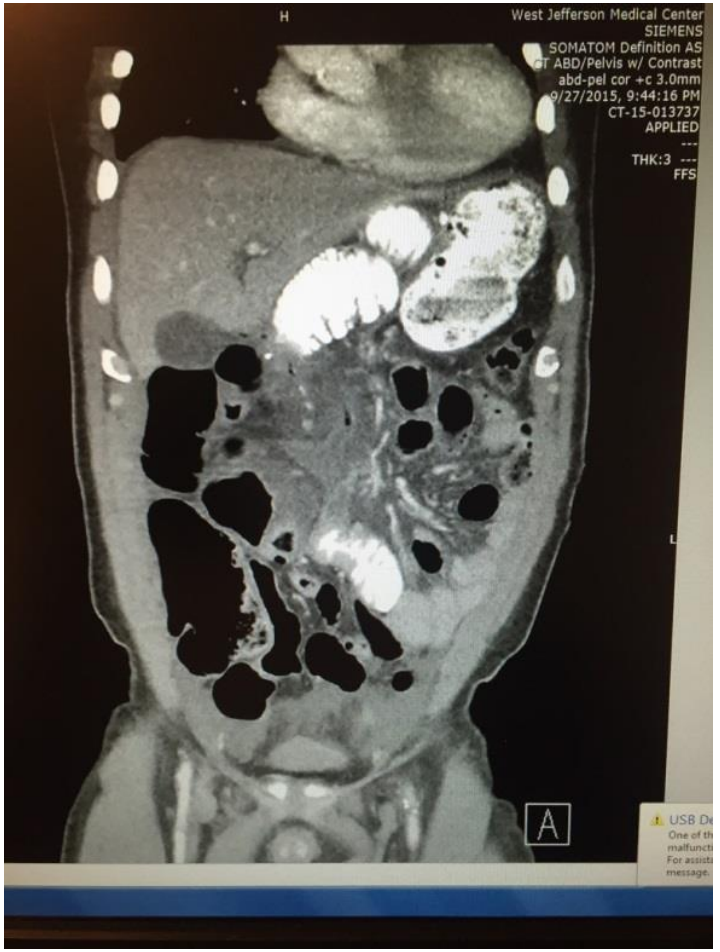
- He was taken to operating room where a T-Tube was placed into the perforation and AmnioFix 2x12 graft was placed over the tube insertion site.

Case Presentation

- 58 yo male s/p gastrectomy for cancer represented to hospital with perforation in the afferent limb of his gastrojejunostomy.

Case Presentation

- He was taken to the OR where the perforation was identified and AmnioFix graft was placed. A JP drain was placed next to the perforation and brought out through abdomen.

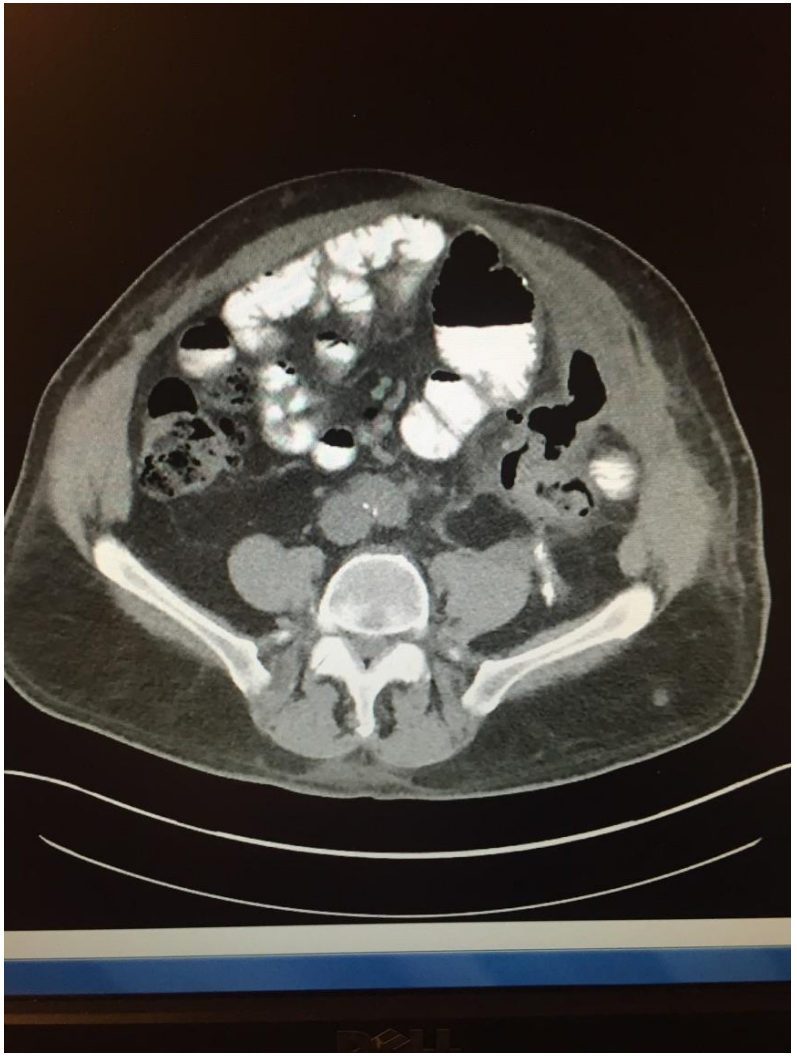


Case Presentation

- In 3 days his drainage changed from bilious to serosanguinous. His diet was advanced and his drain was was pulled and he was sent home.

Case Presentation

- 63 yo male with anastomotic leak post colon resection with enterocutaneous fistula for repair. AmnioFix graft was placed at the time of repair.

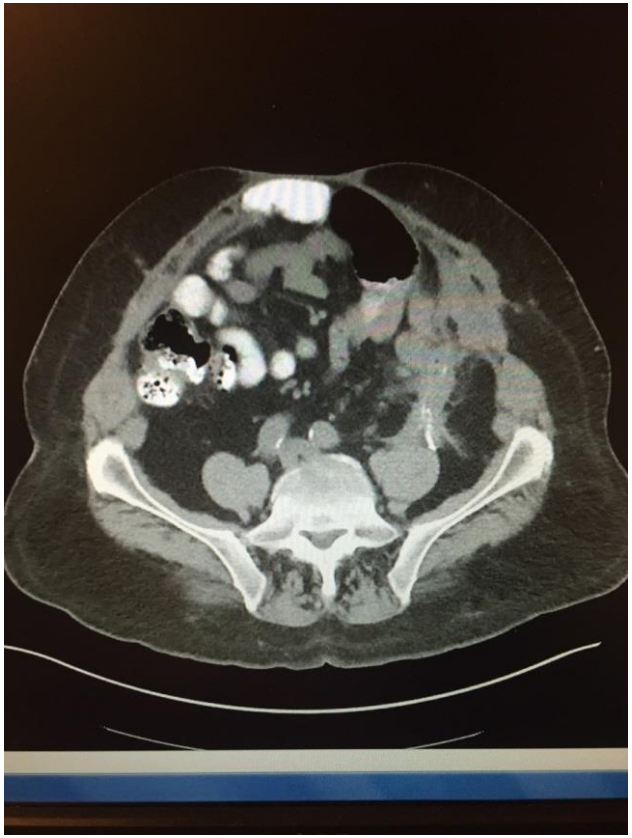


Case Presentation

His post op course was complicated by a recurrent perforation at the fistula site.

He was again taken to OR and the site was cleaned and inspected and his wound was closed over a wound vac.

His fistula closed and he was eating in 7 days post op.



Series

- 30 colectomies using AmnioFix grafts
- Age 28-84
- MF 15/15
- Lap vs Open 28/2
- 12 sigmoid, 12 R colon, 3 T colon, 3 subtotal colon

Results

- Hospital LOS: 2 – 4 days
- Anastomotic complications: 0
- Other post op complications: 3 with post op ileus

Conclusion

- AmnioFix grafts in my practice have been proven to be very beneficial.

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Informatics & Reimbursement

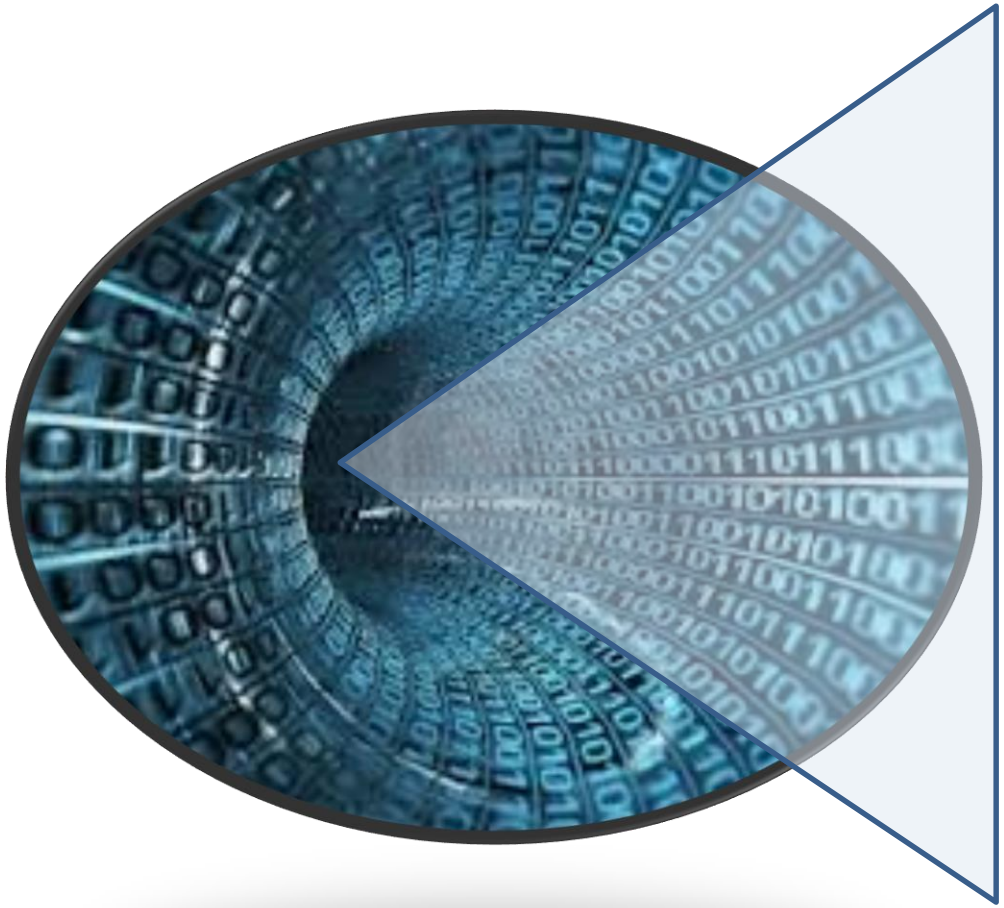
Debbie Dean

Executive Vice President

MIMEDX INFORMATICS

- MiMedx has invested and continues to invest in Data Assets, Infrastructure, People, and Analytic tools
- Provides a Competitive Advantage
  - Deep understanding of market trends
  - Infuses Data & Analytics in decision making
  - Real time insights that drive near and long term strategy
- Informatics is uncommon for medical device and biotech companies, which creates a competitive advantage for MiMedx

INDUSTRY LEADING DATA ASSETS



Medicare Claims

- More than 56M Lives
- More than 9B records
- 2011/2012/2013/2014

Private Payer Claims

- More than 39M Lives
- Nearly 4B records
- 2011/2012/2013/2014

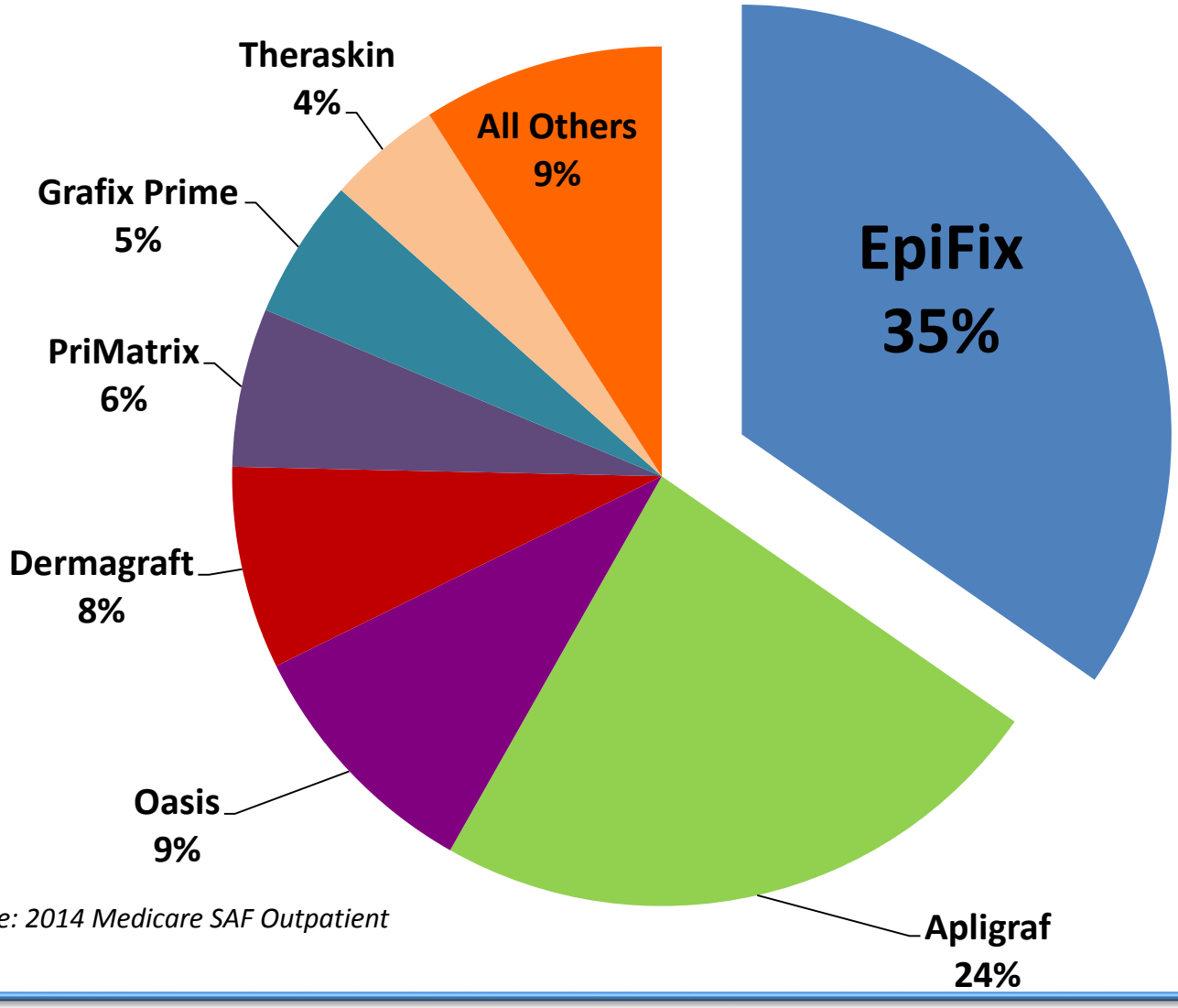
Tissue Utilization

- More than 240k tissues
- 100s of procedure types

MEASURE AND FOCUS MARKET PENETRATION

- MiMedx is clearly expanding the wound care market.
- MiMedx is showing an exponential increase in market penetration.
- The information allows us to focus our penetration and identifies new market expansion.

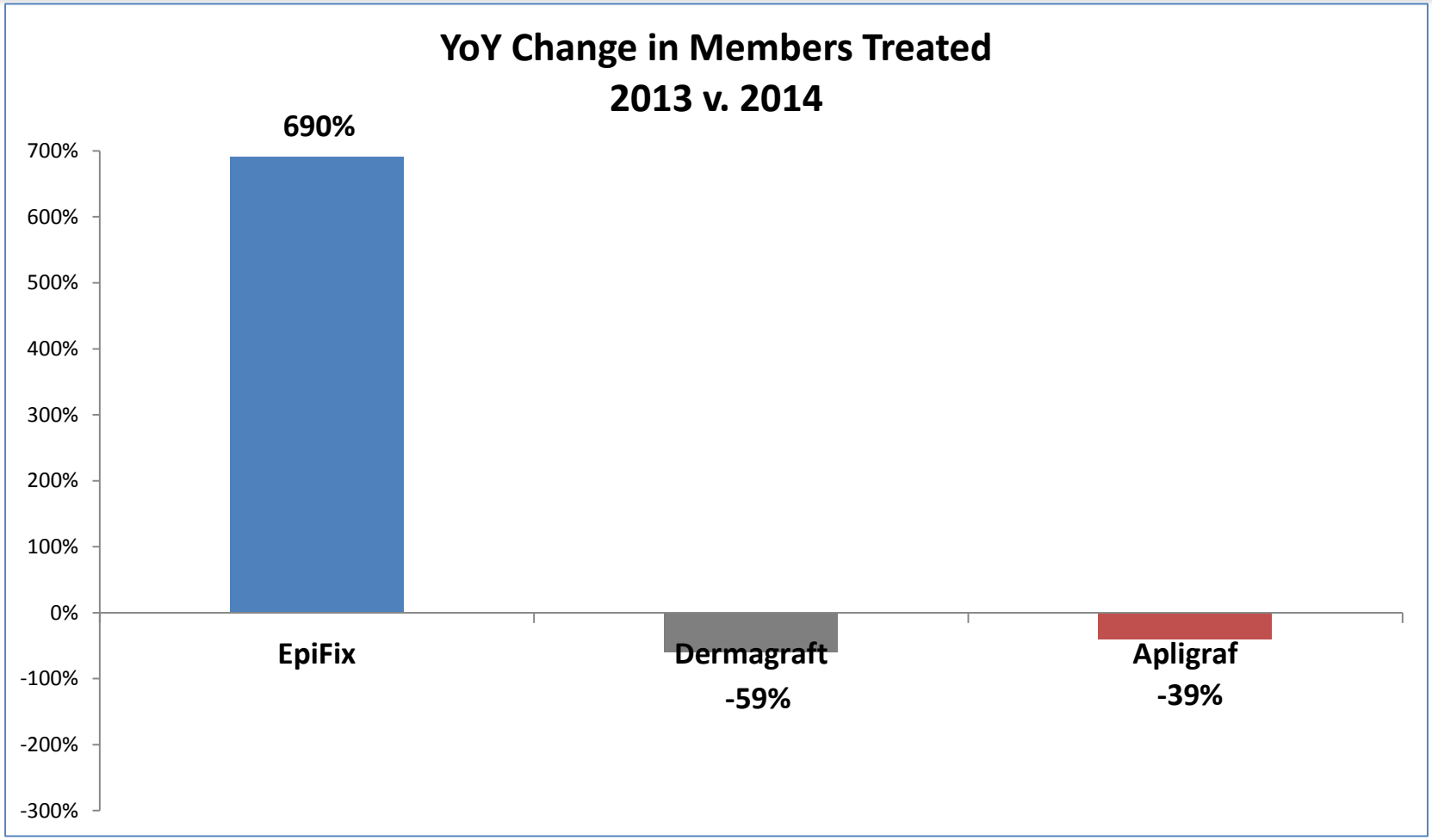
2014 Medicare Outpatient Paid Claim Dollars



Source: 2014 Medicare SAF Outpatient

MiMedx

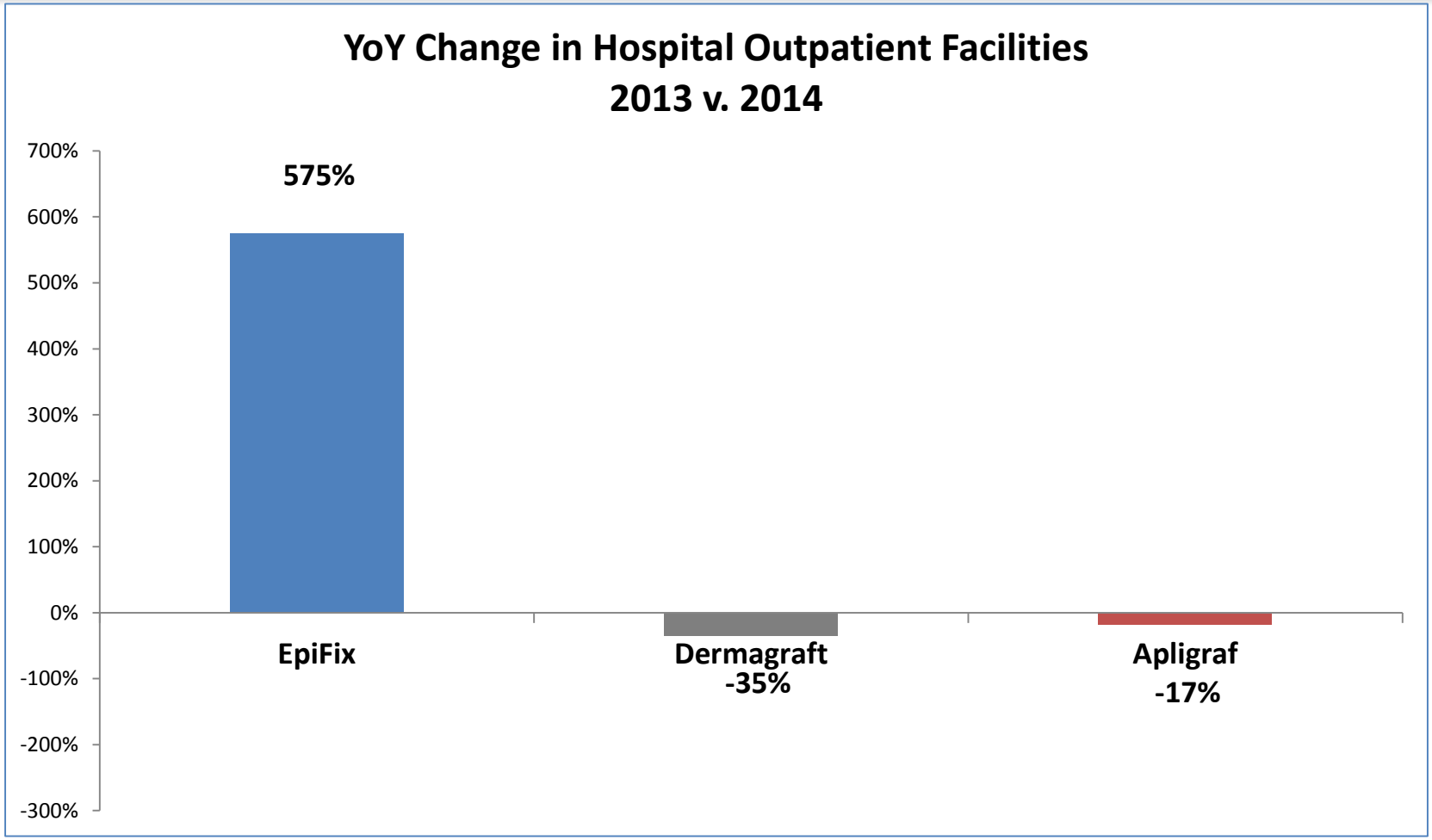
MEDICARE OUTPATIENT



Source: 2014 Medicare SAF Outpatient

MiMedx

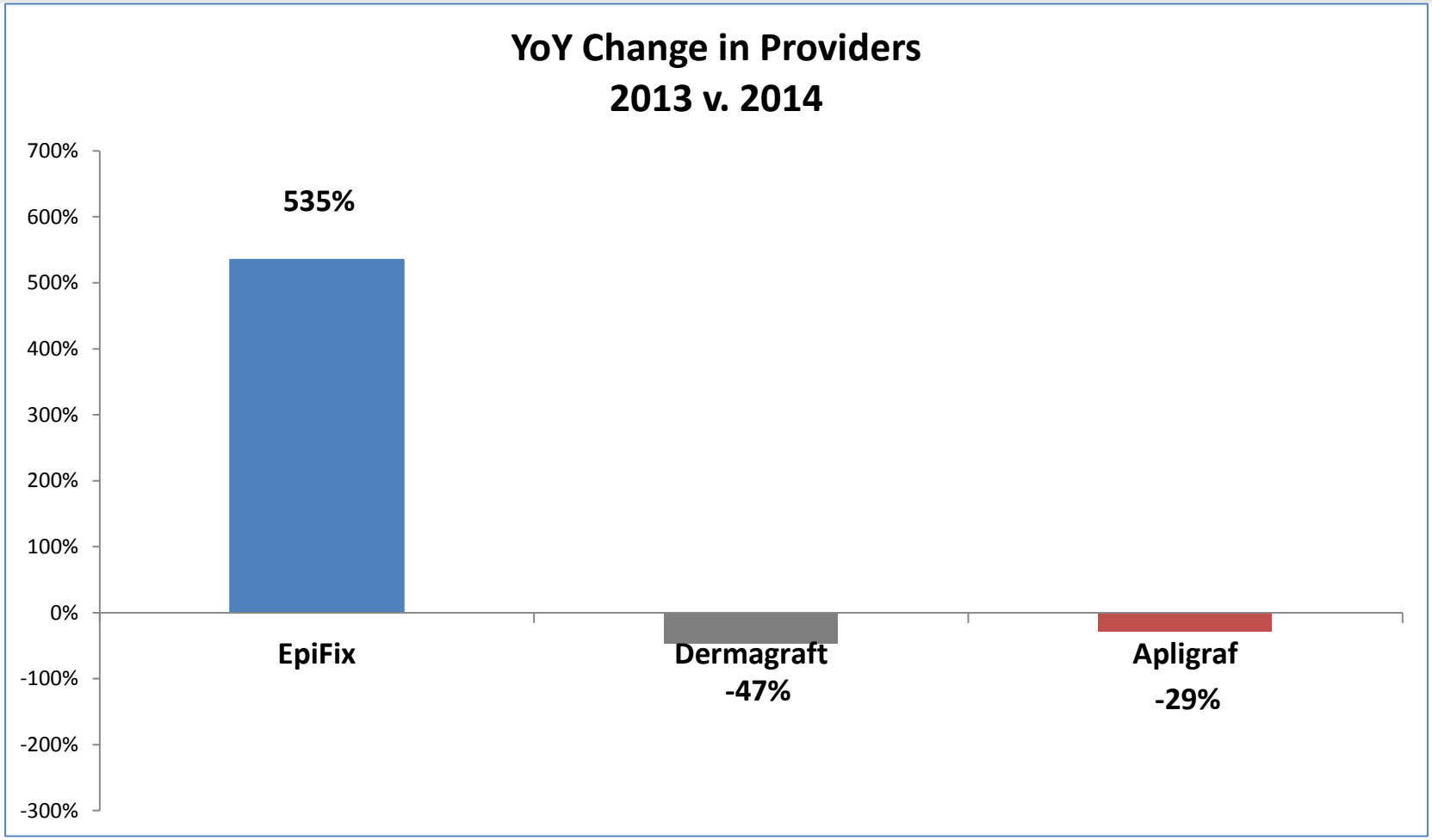
MEDICARE OUTPATIENT



Source: 2014 Medicare SAF Outpatient

MiMedx

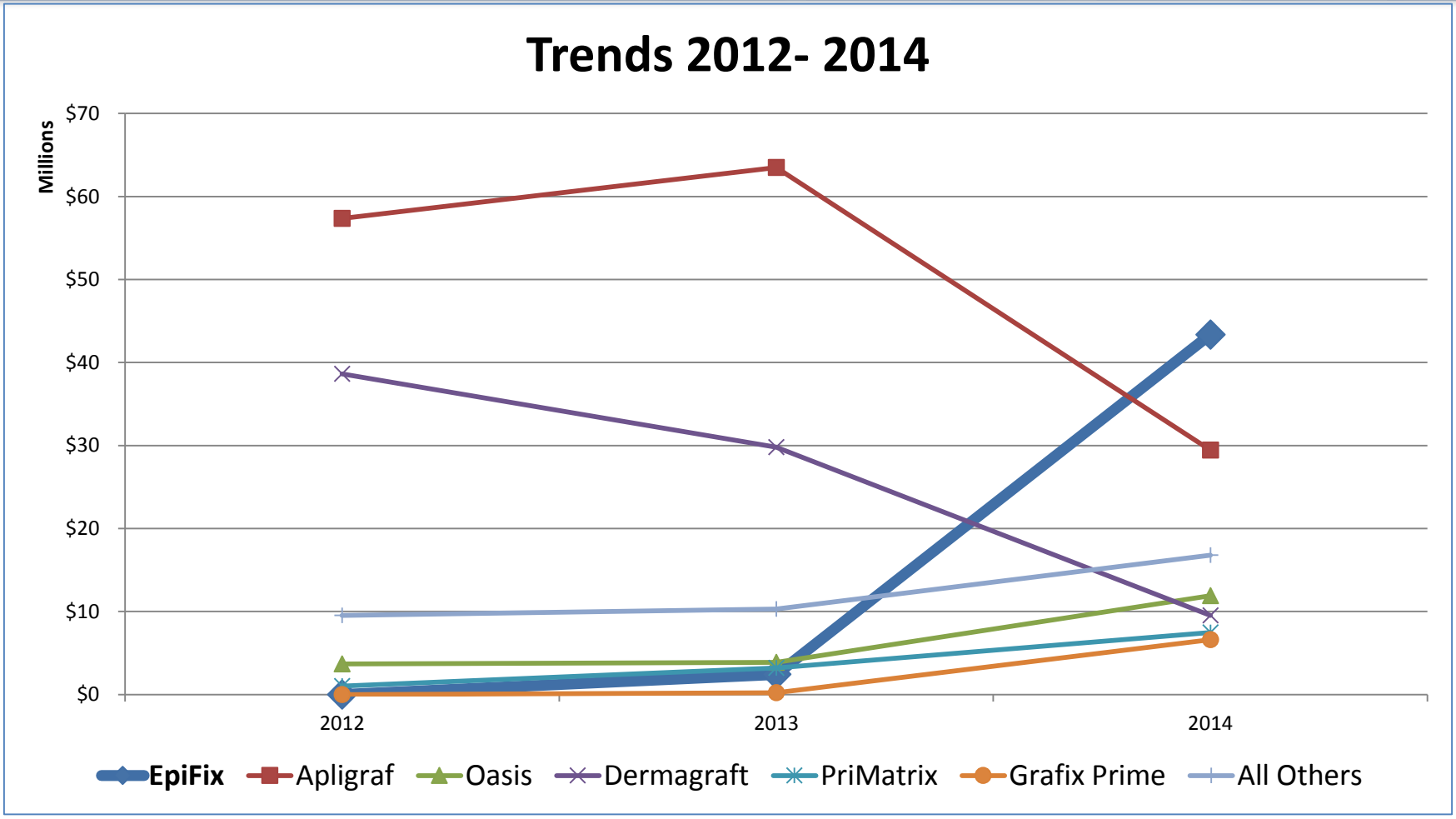
MEDICARE OUTPATIENT



Source: 2014 Medicare SAF Outpatient

MiMedx

MEDICARE OUTPATIENT

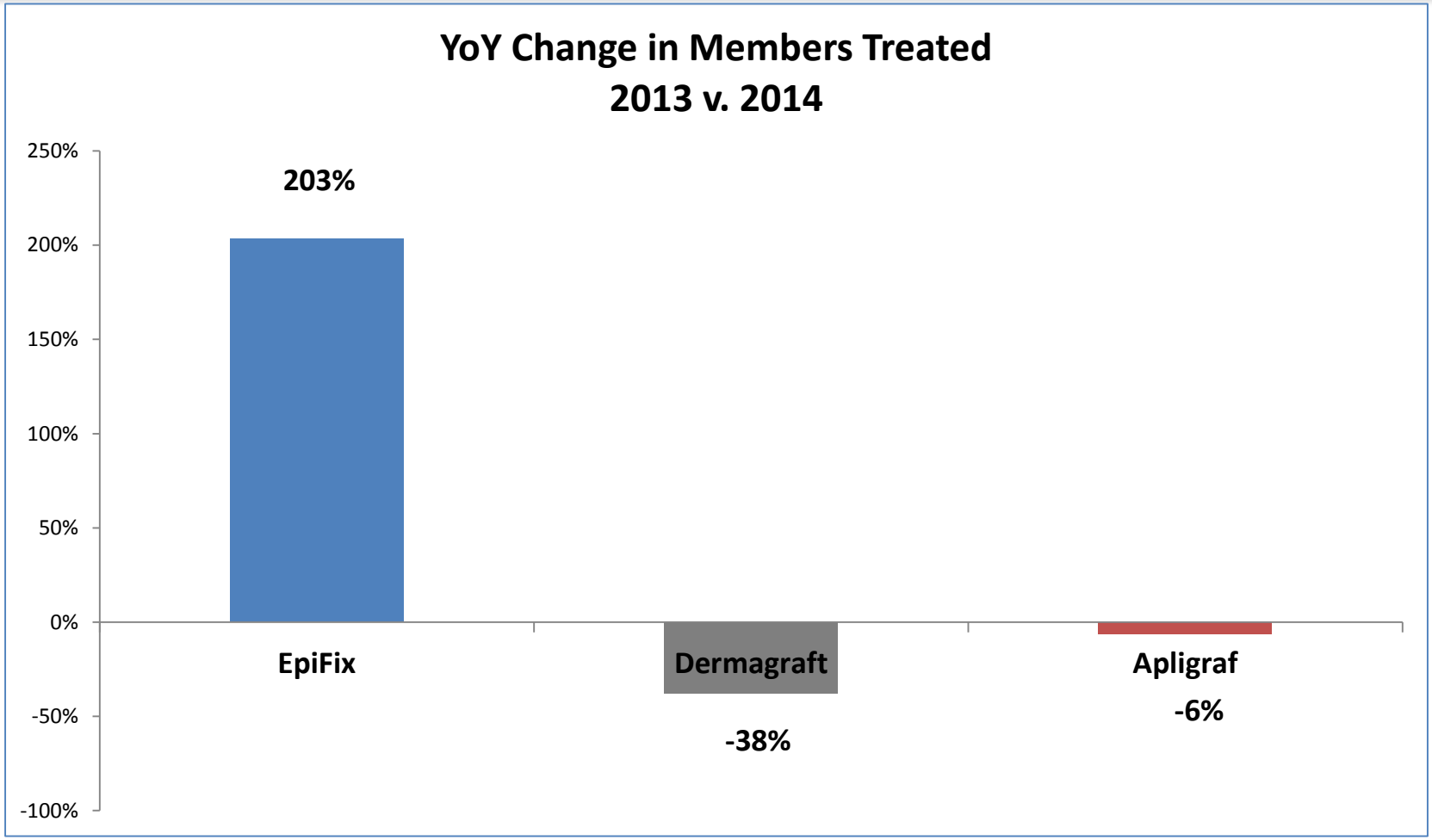


Source: 2014 Medicare SAF Outpatient

MiMedx

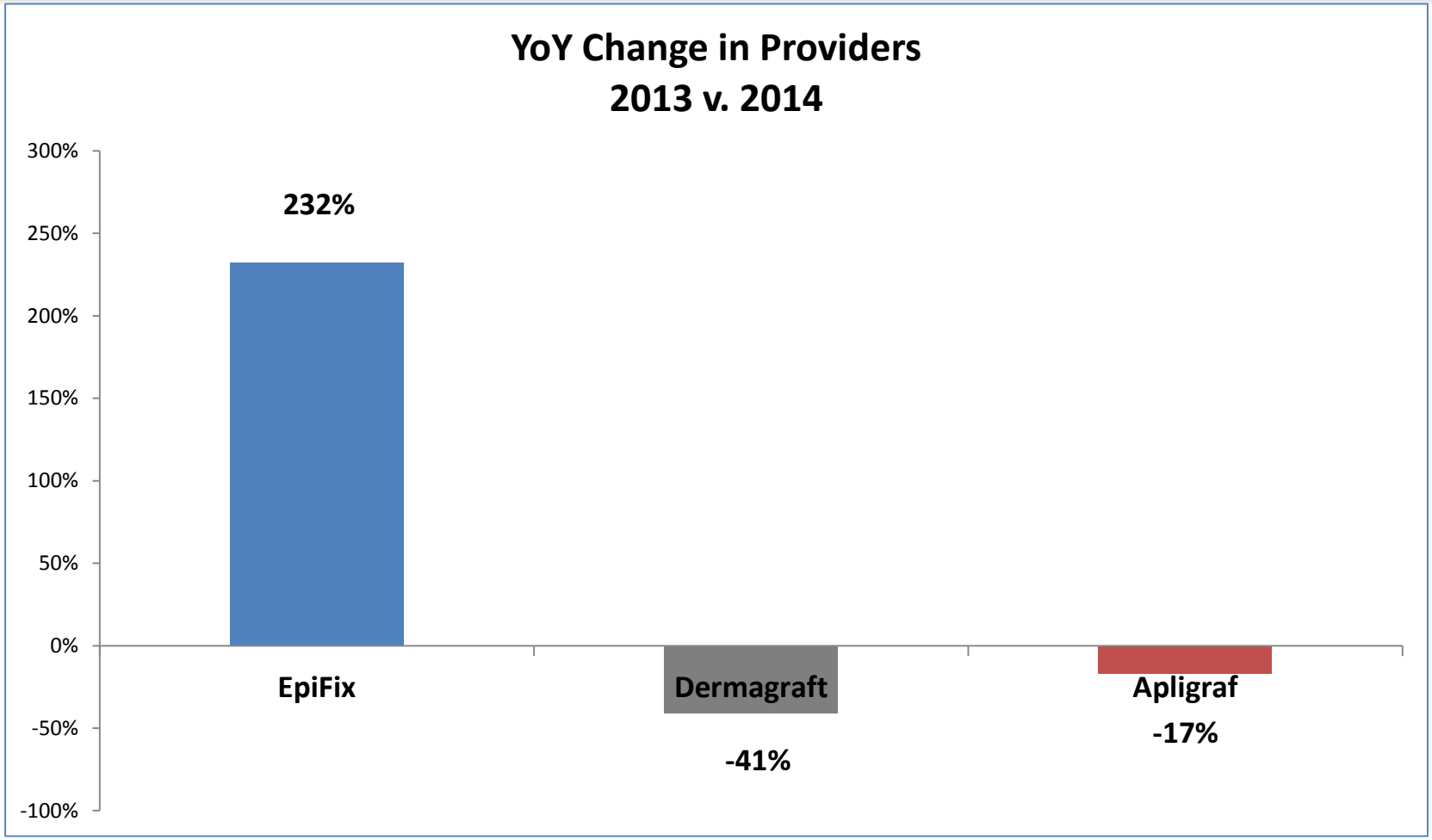
PHYSICIAN OFFICE

MEDICARE PRIVATE OFFICE



Source: 2014 Medicare SAF Carrier

MEDICARE PRIVATE OFFICE



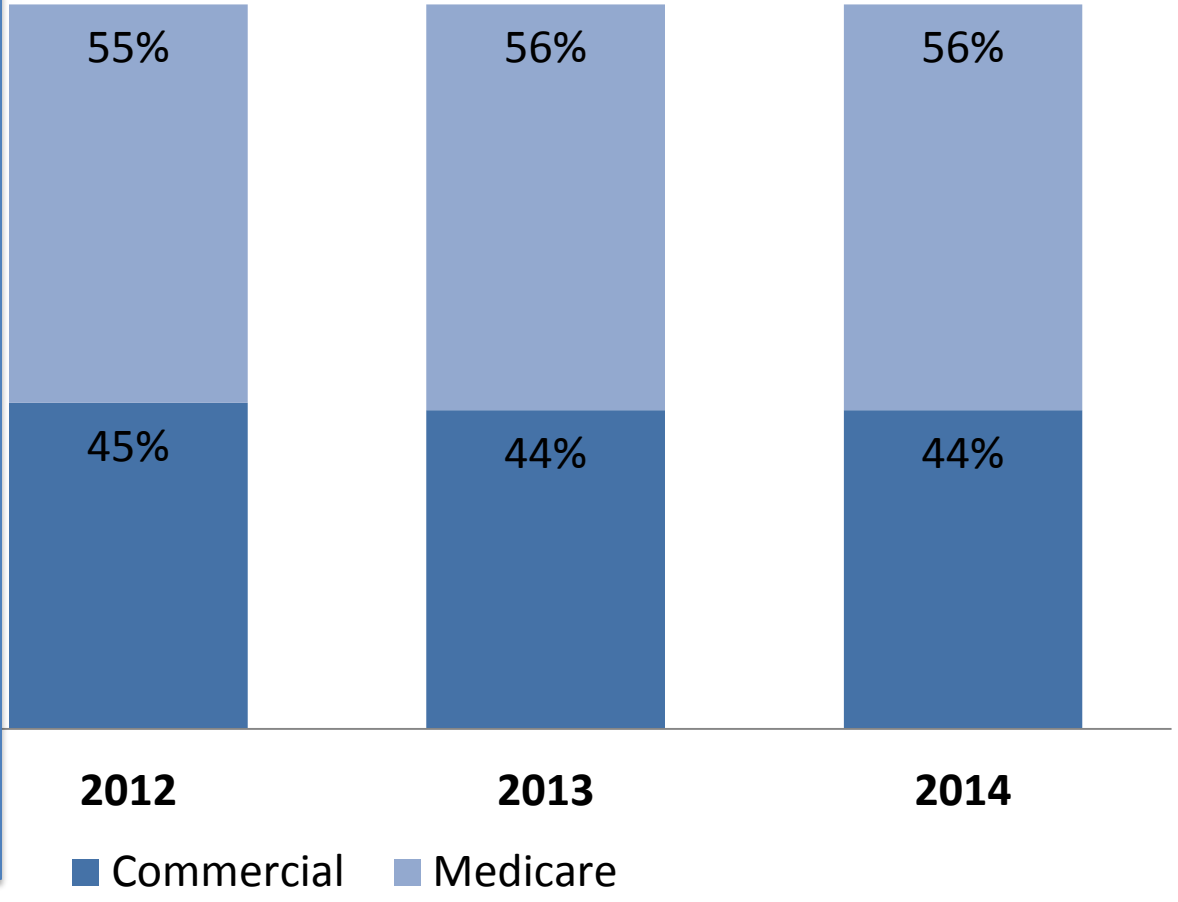
Source: 2014 Medicare SAF Carrier

MARKET LANDSCAPE

2011-2014 MARKET LANDSCAPE

Medicare and Commercial distribution remains consistent.

Data Analysis Shows 40-45%

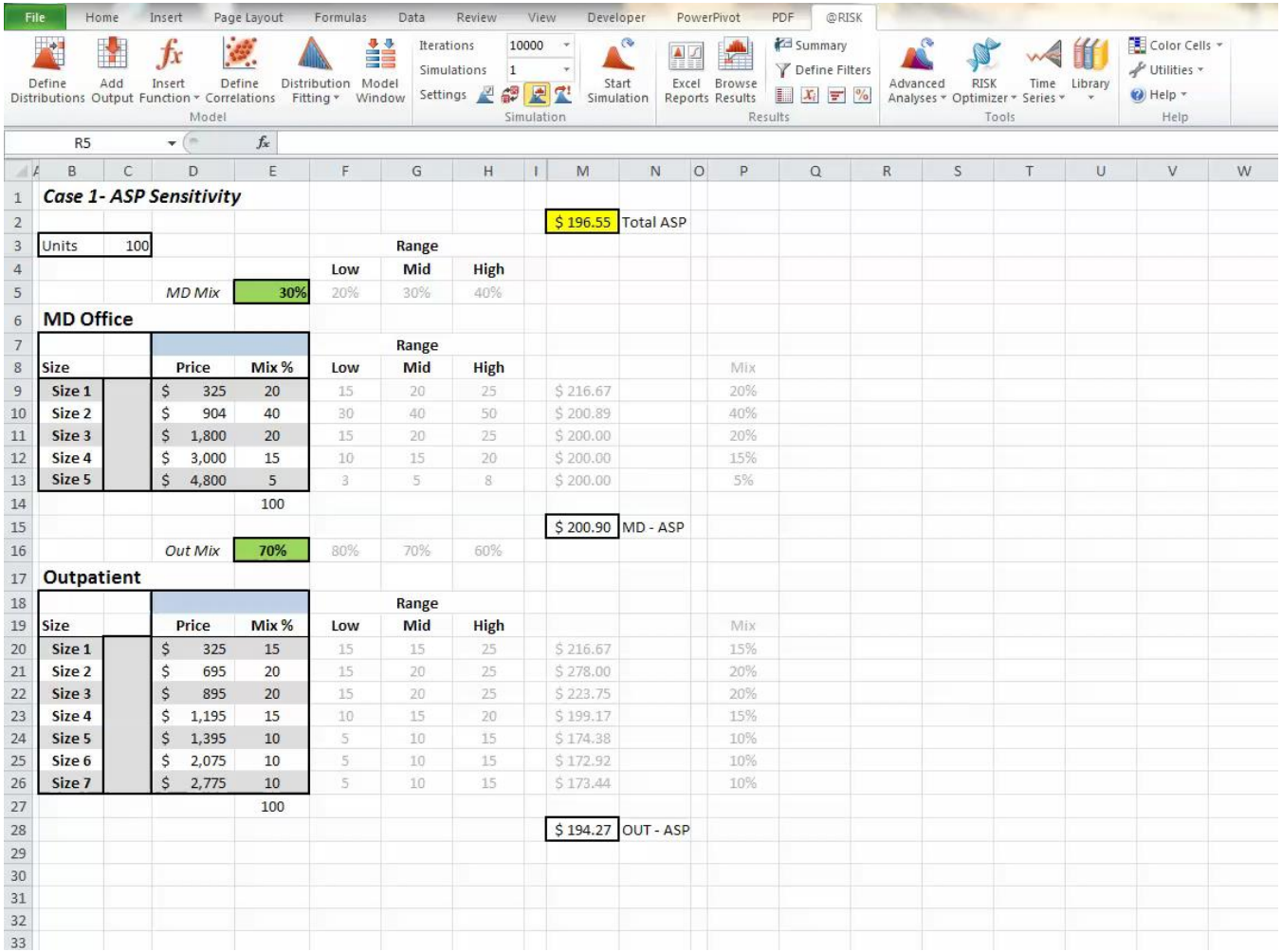


Source: 2012-2014 Medicare SAF Outpatient, Truven Commercial Data 2012-2014

MiMedx

2015 PRICE/SIZE SIMULATION – ASP EXAMPLE

- Model the impact of price and size decisions
- Use Monte Carlo Simulations to...
  - Determine optimal pricing
  - Impact of pricing on ASP
  - Impact of product mix on ASP



File Home Insert Page Layout Formulas Data Review View Developer PowerPivot PDF @RISK

Define Distributions | Add Output | Insert Function | Define Correlations | Distribution Fitting | Model Window — Model

Iterations 10000 | Simulations 1 | Settings | Start Simulation — Simulation

Excel Reports | Browse Results | Summary | Define Filters — Results

Advanced Analyses | RISK Optimizer | Time Series | Library — Tools

Color Cells | Utilities | Help — Help

R5

Case 1- ASP Sensitivity

													$ 196.55	Total ASP									
	Units	100					Range																
							Low	Mid	High														
			MD Mix	30%			20%	30%	40%														
	MD Office																						
								Range															
	Size		Price	Mix %			Low	Mid	High								Mix						
	Size 1		$ 325	20			15	20	25				$ 216.67				20%						
	Size 2		$ 904	40			30	40	50				$ 200.89				40%						
	Size 3		$ 1,800	20			15	20	25				$ 200.00				20%						
	Size 4		$ 3,000	15			10	15	20				$ 200.00				15%						
	Size 5		$ 4,800	5			3	5	8				$ 200.00				5%						
				100																			
													$ 200.90	MD - ASP									
			Out Mix	70%			80%	70%	60%														
	Outpatient																						
								Range															
	Size		Price	Mix %			Low	Mid	High								Mix						
	Size 1		$ 325	15			15	15	25				$ 216.67				15%						
	Size 2		$ 695	20			15	20	25				$ 278.00				20%						
	Size 3		$ 895	20			15	20	25				$ 223.75				20%						
	Size 4		$ 1,195	15			10	15	20				$ 199.17				15%						
	Size 5		$ 1,395	10			5	10	15				$ 174.38				10%						
	Size 6		$ 2,075	10			5	10	15				$ 172.92				10%						
	Size 7		$ 2,775	10			5	10	15				$ 173.44				10%						
				100																			
													$ 194.27	OUT - ASP									

MiMedx

REIMBURSEMENT

ICD-10 READINESS

- **ICD-9 to ICD-10 mandatory transition effective October 1, 2015**
  - Claims for all health care services and hospital inpatient procedures performed on or after October 1 must use ICD-10 diagnosis .
  - Affects everyone covered by HIPAA—not just those who submit Medicare or Medicaid claims.
- **Data specificity and reporting**
  - ICD-10 represents a significant revision and expansion to the code sets to provide a greater level of specificity in coding diagnoses.
  - Improved ability to measure quality, efficacy and safety of patient care.
  - Data increase sensitivity when refining grouping and reimbursement methodologies
- **Internal ICD-10 "Go Live" Implementation Strategies**
  - We have focused on early preparation, adequate education and proper testing to mitigate potential problems during the transition
    - Reimbursement and Health Policy personnel are all either certified or proficient in ICD-10 coding.
    - Reimbursement Hotline automated processes in place to ensure turn around time standards are met.
    - Sales personnel have been educated and trained on coding changes and have tools available for educating providers.
  - Post implementation follow up and tracking tools in place to insure minimal disruption to patient care.
- **External ICD-10 Implementation Strategies - Training and Tools**
  - Provider training has taken place and will continue into October with access to effective and easy to use tools to support the transition.
    - *ICD-10 Crosswalk Quick Reference Tool*
    - *ICD-10 Quick List Documentation Tool*
    - ICD-10 FAQ's

PAYER COVERAGE

For the first three quarters of 2015, we have coverage confirmations as follows:

Commercial coverage:

- Total of 69 Million new members, with 45 new plans
- 16 BCBS Association plans added in 2015
- Over 160 plans with coverage
- Total commercial coverage membership of 162 Million

Medicare and Traditional Medicaid coverage:

- 2015 Medicare coverage with 36 Million members
- 31 State Medicaid plans with 49 Million members

Total lives covered: 247 Million

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Financial

Michael Senken

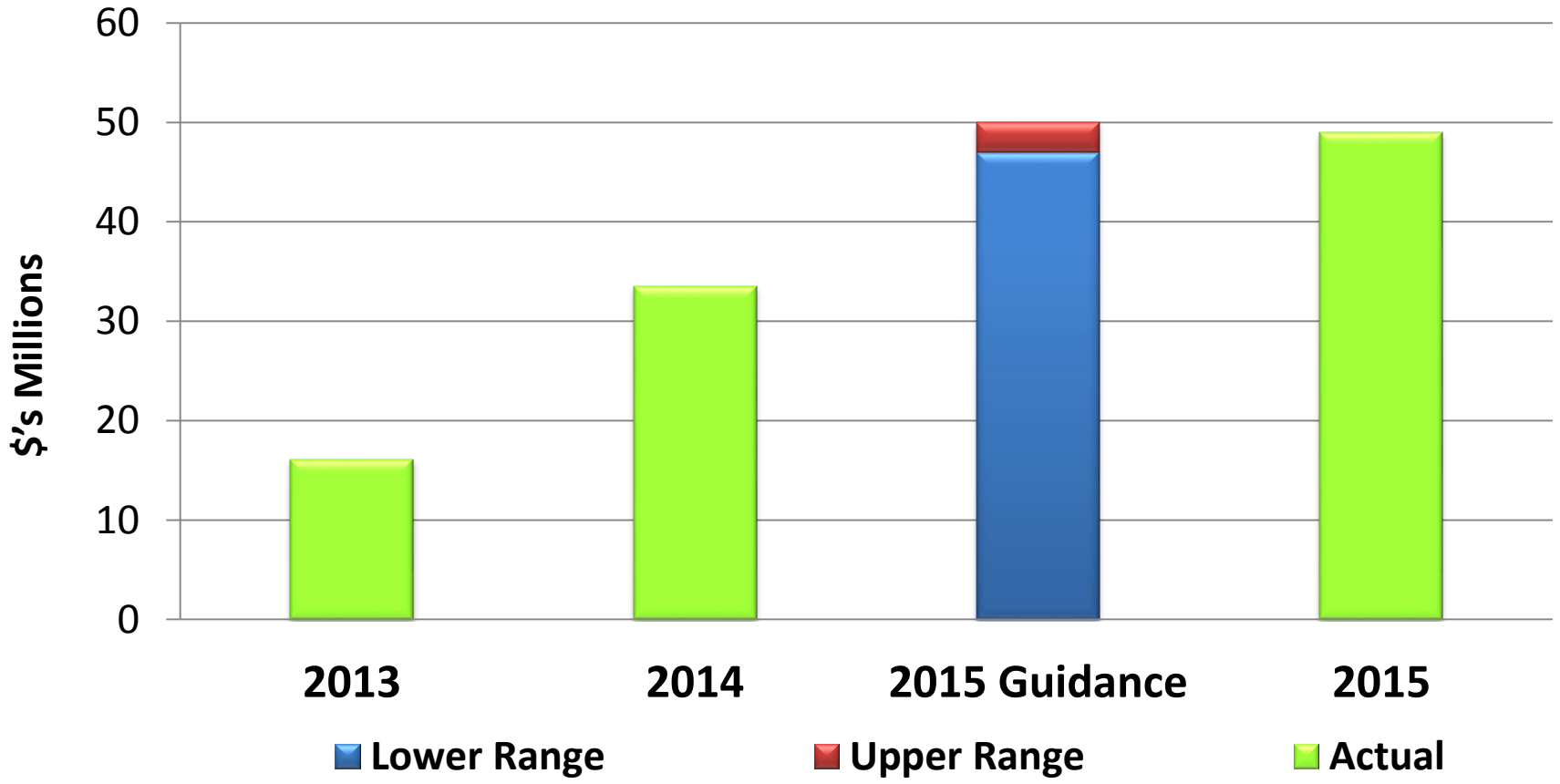
Chief Financial Officer

CORPORATE GOVERNANCE

- Compliance Program
  - Board level reporting
  - Designed for full compliance with the Sunshine Act
- Risk Management Program
  - Board level reporting
  - Performed self assessment to determine high risk areas
  - Ongoing monitoring of improvement objectives
- Sarbanes Oxley
  - Board level reporting
  - Implemented continuous improvement program to assure ongoing strengthening of business processes in support of growth objectives

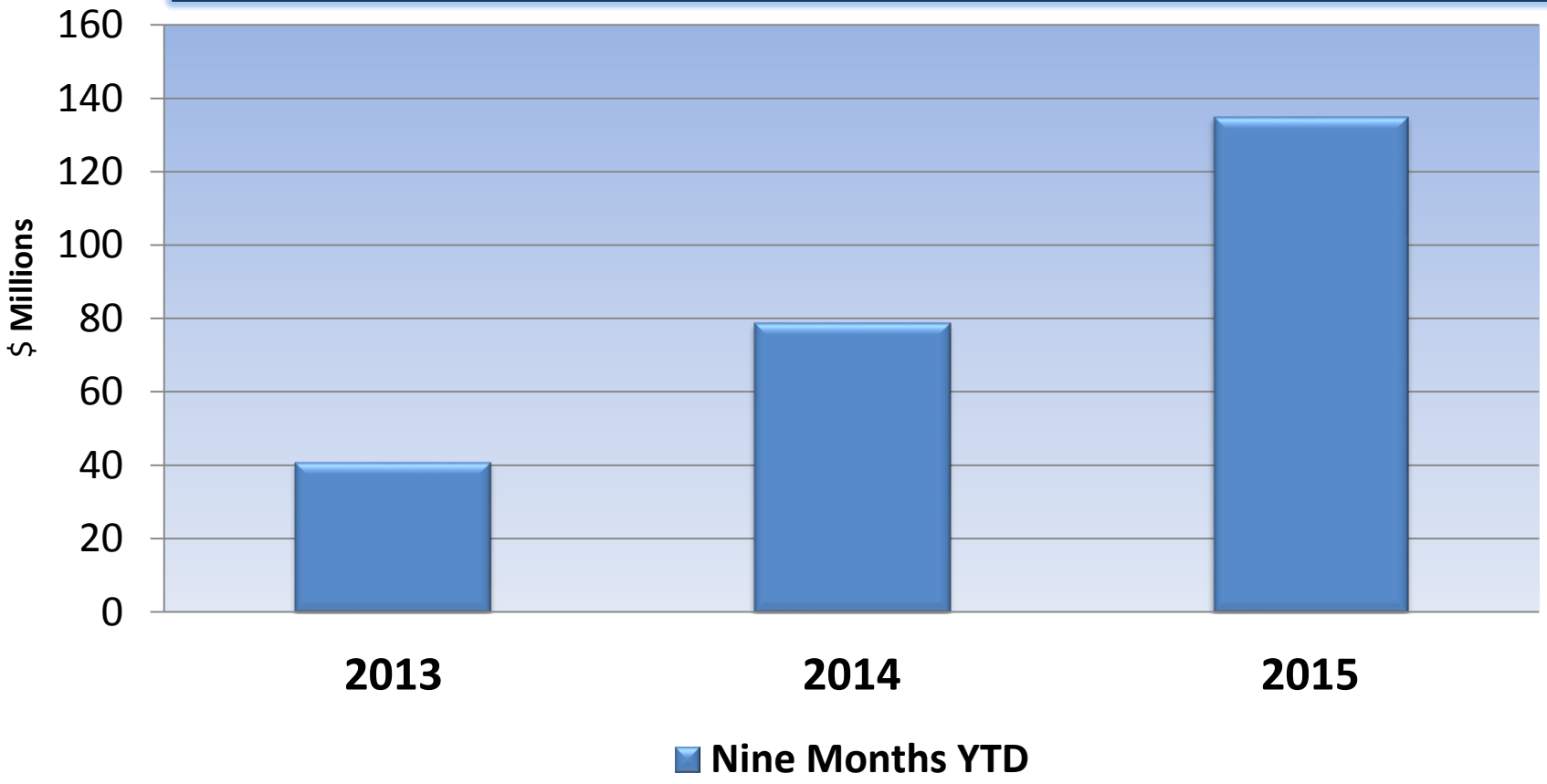
THIRD QUARTER REVENUE

- **16th Consecutive Quarter Meeting or Exceeding Guidance**
- **46% increase vs prior year**



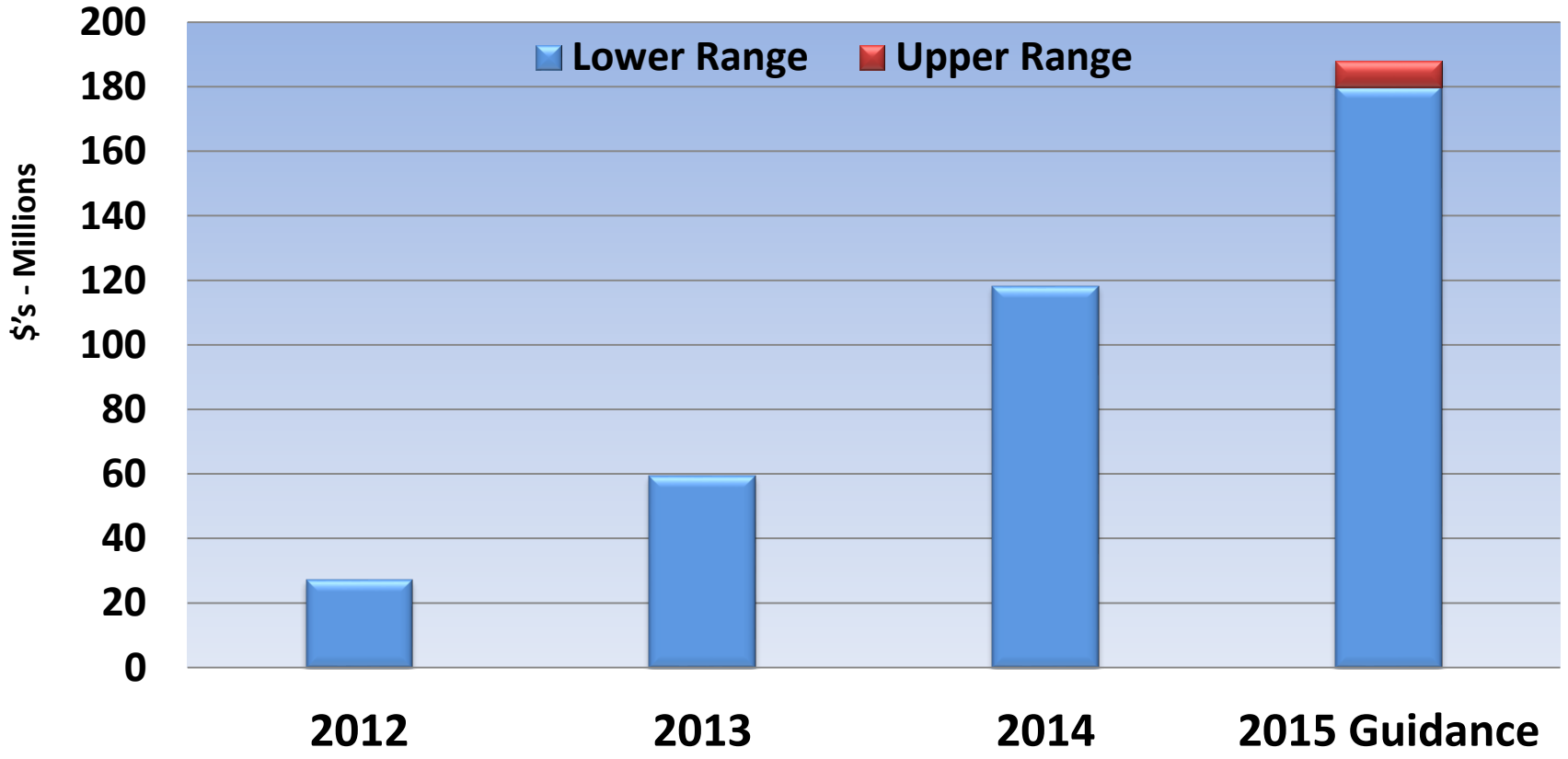
YEAR TO DATE REVENUE

- **72% increase vs prior year**
- **Growth driven by increase in direct sales reps, increased reimbursement coverage, new product introductions and market expansion**



2015 REVENUE GUIDANCE

- Market share growth and expansion
- Increased private pay reimbursement coverage
- Sales force expansion



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