



Agenda Item 1

Featured Start-Up – gel-e Life Sciences



BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION
INFORMATION OR DISCUSSION

TOPIC: Featured Start-Up – gel-e Life Sciences (information item)

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: September 8, 2016

SUMMARY: The featured start-up, gel-e Life Sciences, has developed an advanced wound care platform based on technology from the University of Maryland, College Park. By making molecular modifications to natural biopolymers, gel-e’s patented approach works rapidly to stop bleeding in a clean and safe manner. The product works independent of the body’s natural clotting ability and the material comes off easily after the wound heals.

The company’s first product, Vascular gel-e, has been approved by the FDA for vascular access procedures and other solutions in development include chronic wound dressings, surgical gels, and even over-the-counter products. Gel-e Life Sciences has received support and funding from numerous USM and State programs, including the Fischell Institute, TAP, MIPS, and TEDCO. The company expects to serve multiple large markets in excess of \$7 billion, where more effective, less expensive and safer wound treatments are needed.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: This item is for information purposes.

CHANCELLOR’S RECOMMENDATION: This item is for information purposes.

COMMITTEE RECOMMENDATION:

DATE:

BOARD ACTION:

DATE:

SUBMITTED BY: Thomas Sadowski / Suresh Balakrishnan (301) 445-2783



Committee on Economic Development and Technology Commercialization

Featured Start-Up- gel-e Life Sciences

September 8, 2016



gel-e
Life Sciences

Corporate Overview
September 2016

Board of Regents Economic Development Committee

Safe harbor statement

Except for the historical information contained herein, the matters discussed in this presentation contain forward-looking statements. The accuracy of these statements is subject to significant risks and uncertainties. Actual results could differ materially from those contained in the forward-looking statements. The Company's actual and projected performance is based upon various sources of market information available to the Company at the time this document was prepared. No representations or warranties can be made with respect to the accuracy of the source information or the validity of the Company's projections derived from the source information.



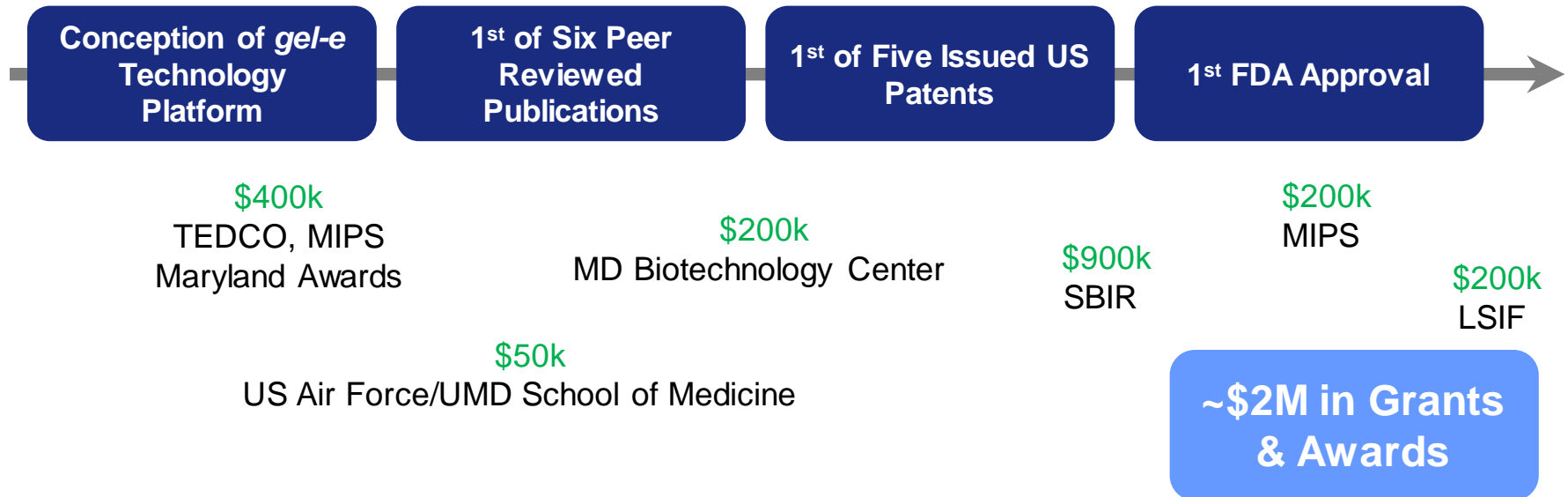
Nurturing disruptive life sciences innovations



Robert E. Fischell Institute for Biomedical Devices

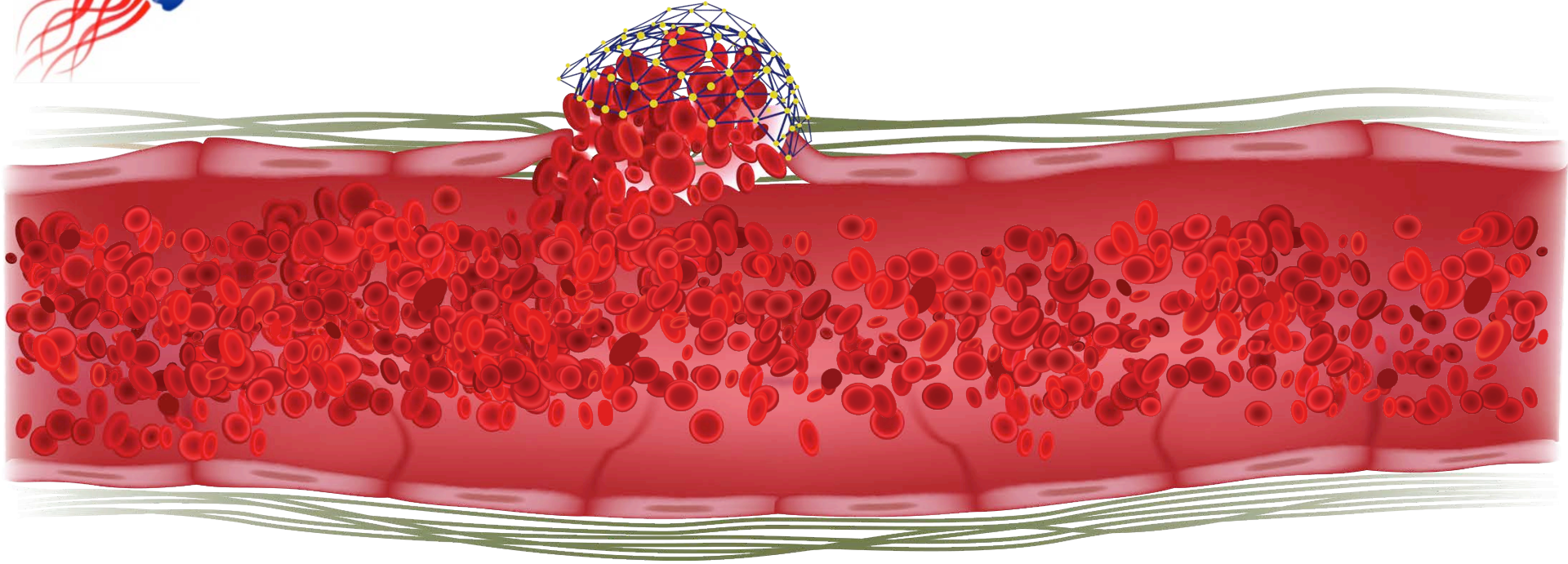


Maryland Technology Advancement Program





gel-e: The next generation of advanced hemostats

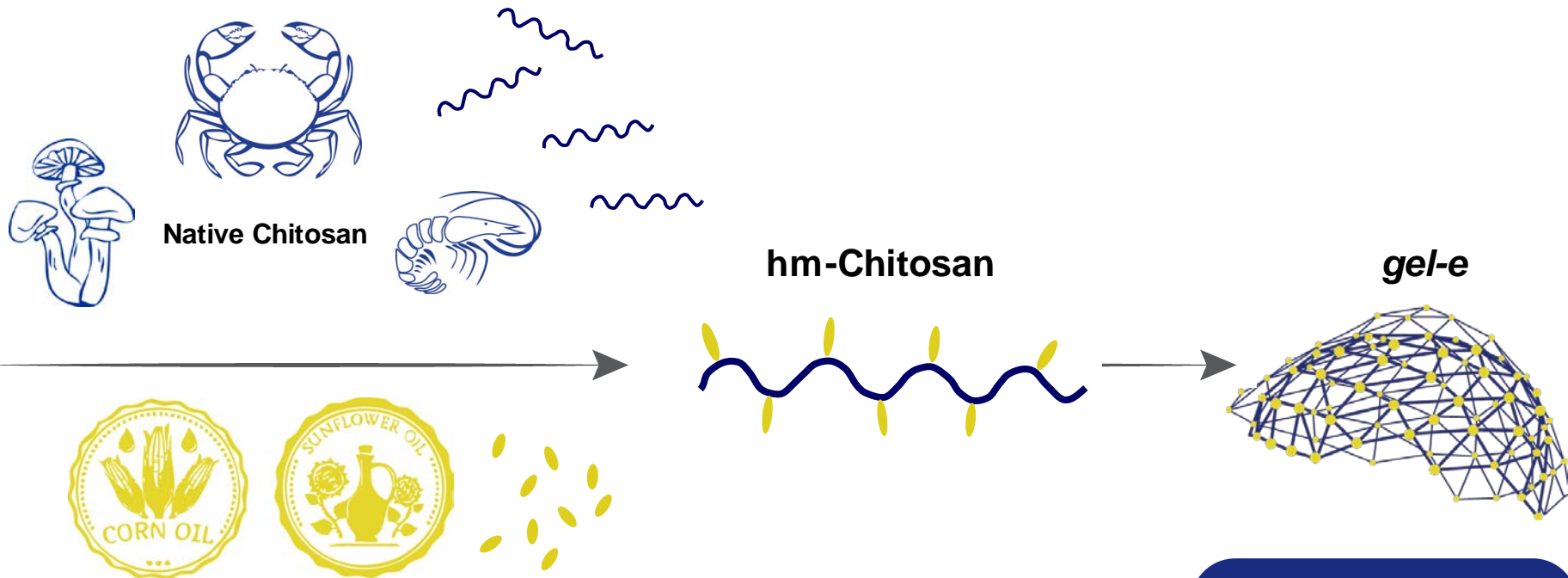


gel-e is:

- extremely quick to stop bleeds
- inexpensive to manufacture
- made from safe ingredients
- requires no clinical prep time
- available in many formulations
- *better than the standard-of-care*



gel-e is made from safe ingredients



gel-e quickly stops bleeds using an inert, self-assembling biopolymer ... now approved by the FDA

gel-e's highly versatile product platform



films

chronic wounds



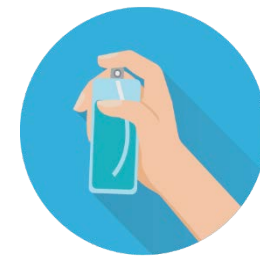
bandages

nuisance bleeds/first-aid/vascular access



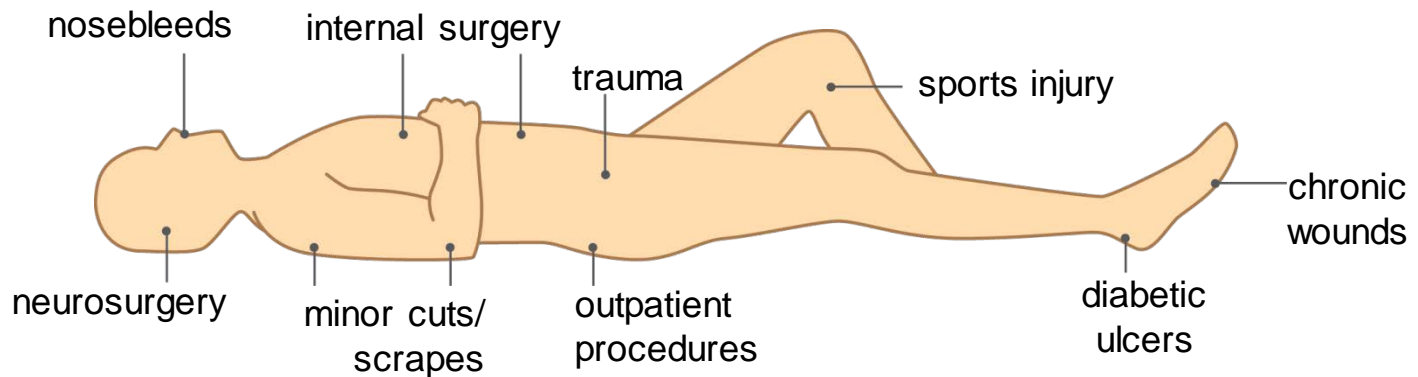
gels

surgical applications

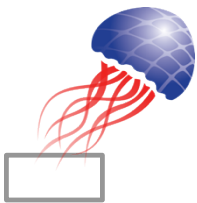


foams

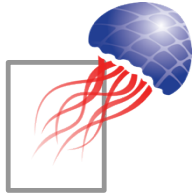
*trauma/
military applications*



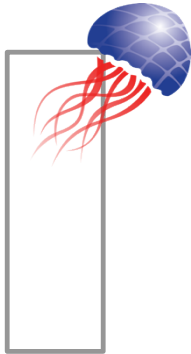
gel-e applies to ANY situation where you need to control bleeding



\$100M



\$500M



\$2B



\$2.7B



\$3B



Military/
trauma



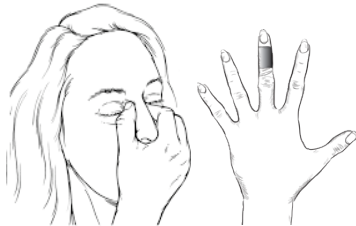
Vascular
access
**already
DA approved*



Internal
surgical

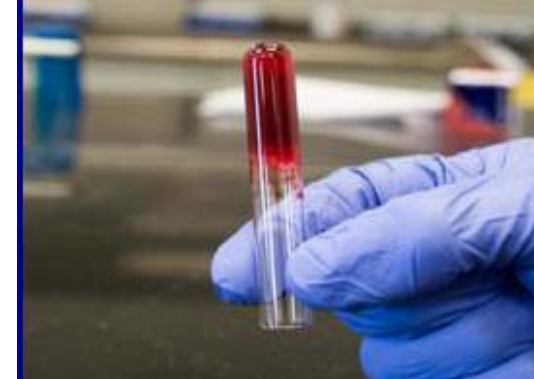


Chronic
wounds



First-aid

gel-e offers a significant improvement vs the standard-of-care



	Cellulose ¹	Fibrin ²	<i>gel-e</i>
Clotting Time	~300 sec	15-30 sec	<5 sec
Cost-of-materials	\$0.10	~\$88.00 ¹	\$0.03
Prep Time	None	~30 min	None
Anti-Microbial	No	No	Yes ³
Scar Reducing	No	No	Yes ⁴

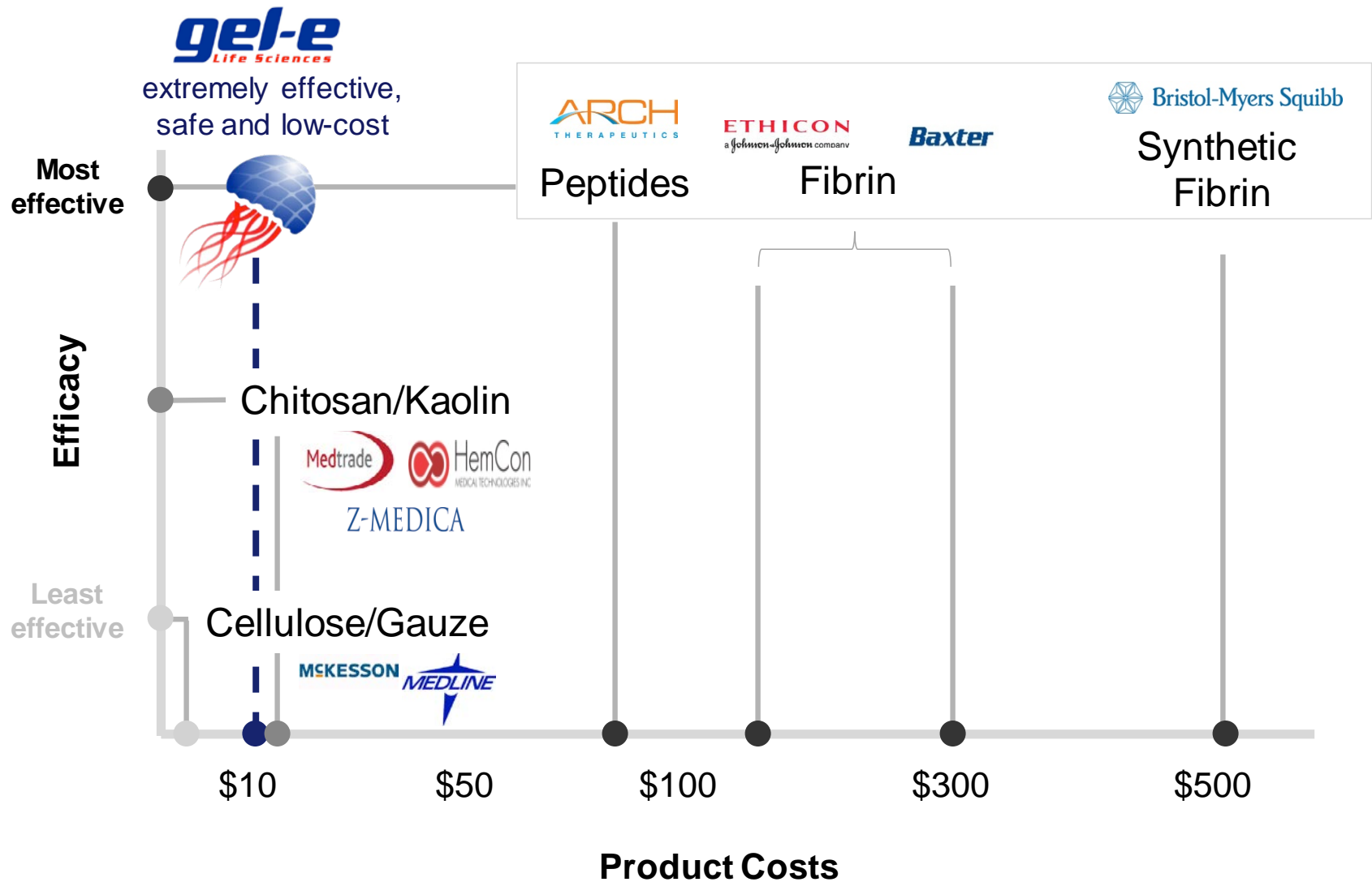
¹Active ingredient in the current standard of care for external and some internal surgical hemostats

²Active ingredient in the current standard of care for internal surgical hemostats; cost estimate does not include estimate for commercial manufacturing

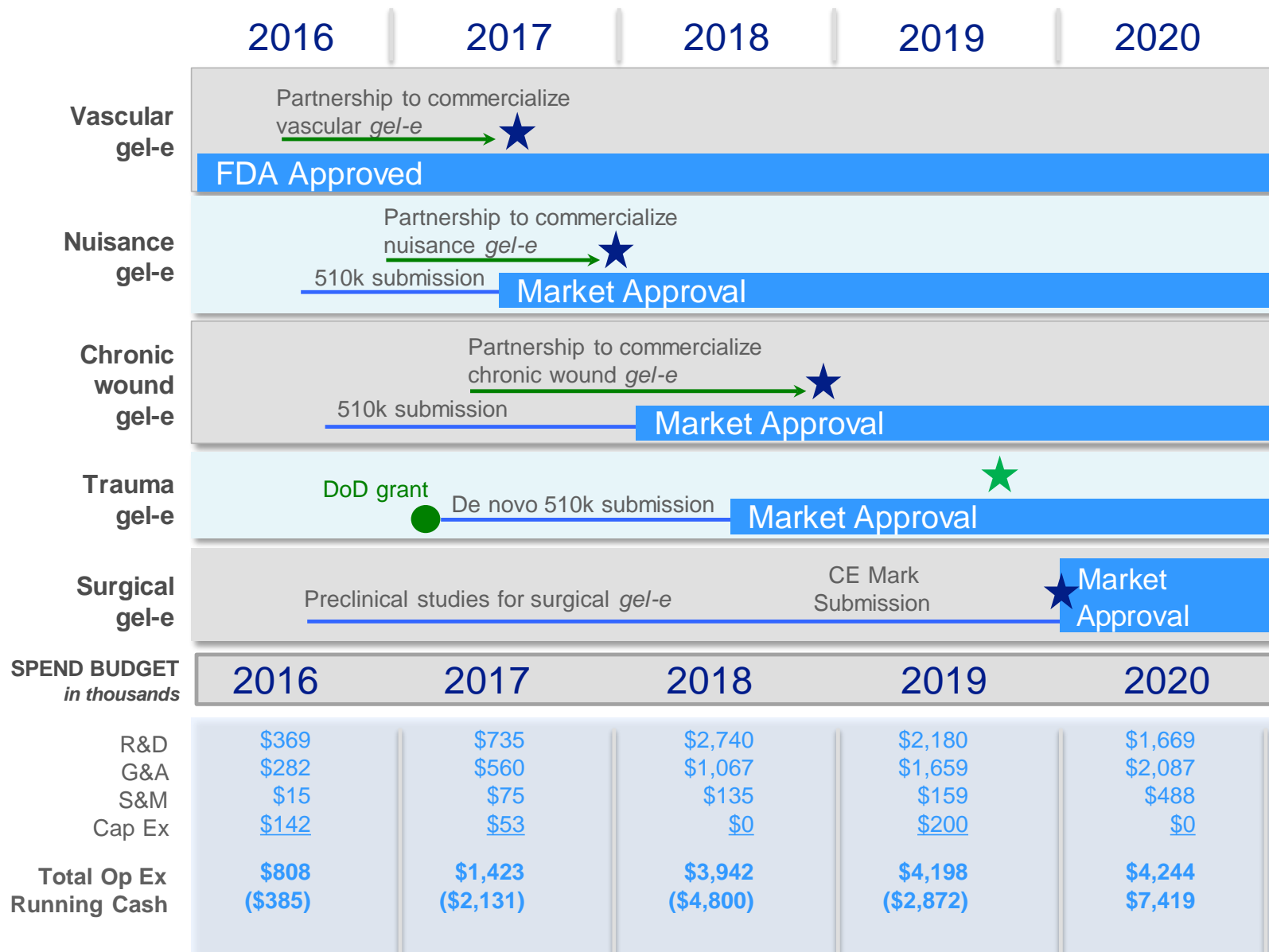
³EI Rabea, et al, Biomacromolecules 4(6), 1457-1465 (2003)

⁴AK Azad, et al, Journal of Biomedical Materials Research , 69B (2), 216-222 (2004)

gel-e's disruptive potential

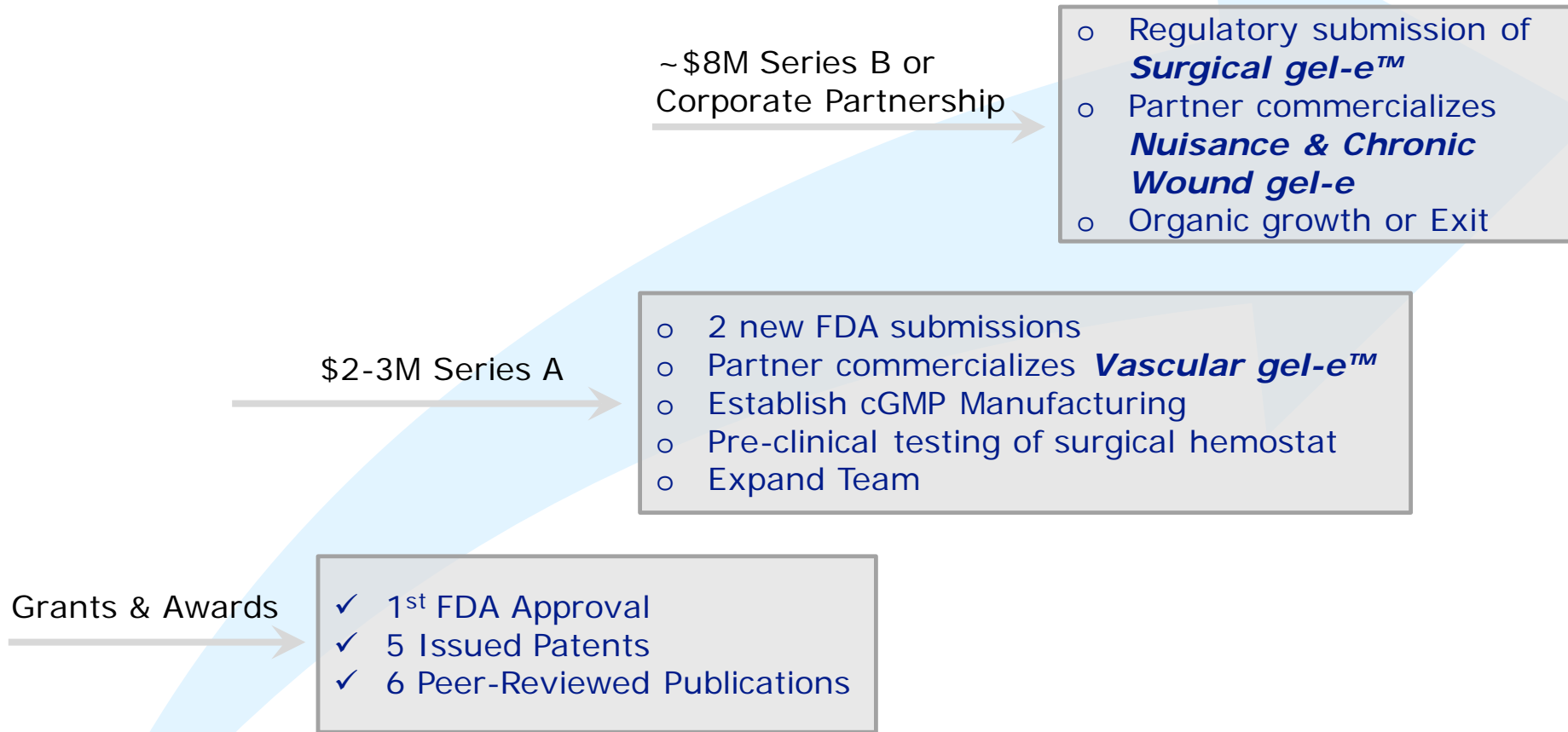


gel-e product development roadmap



★ Commercial Launch

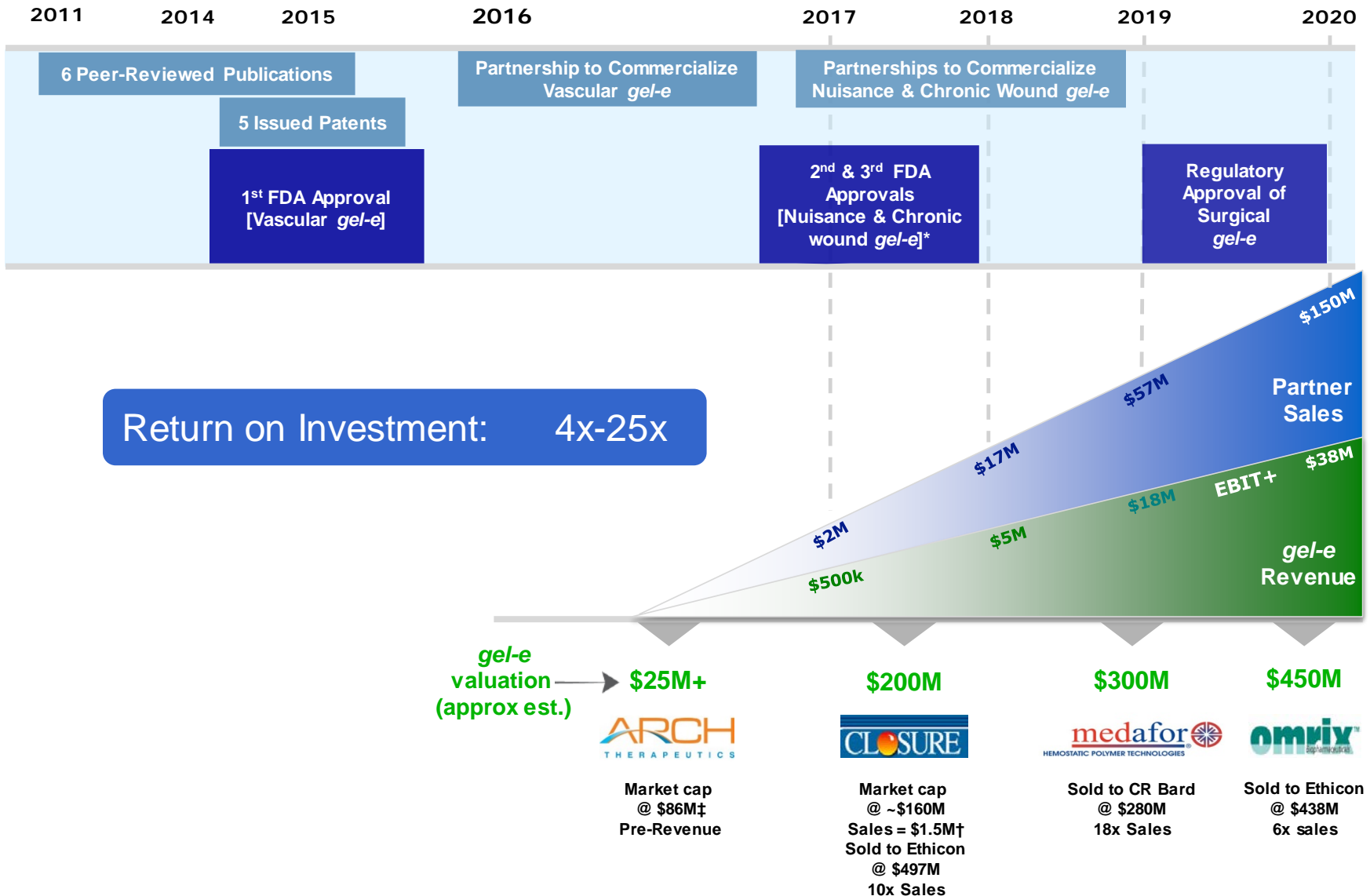
gel-e strategic growth plan



Investor Incentives

- 50% matching grant from NSF on first \$1M invested

gel-e key milestones drive value



*Assumes Q3-2016 Financing

‡ @ August 4, 2016

†Sales & lowest Q'tly market cap in 1997

gel-e management team & advisors

Management & Board



Larry Tiffany
Chairman of the Board

- CEO/Founder, TGM Medicine
- CEO, DioGenix
- CBO, Ore Pharma
- GM, Gene Logic Genomics/Dx
- President, GeneTrax
- SVP WW BD, Gene Logic



Matthew Dowling, PhD
Founder/CSO

- *gel-e* Inventor
- Lead Founder
- Fischell Fellow
- PI on >\$1.7M in Grants



Rich Vincent
CFO

- CFO, DioGenix
- CFO, Sorrento Therapeutics
- CFO, Meritage
- CFO, Elevation Pharma
- CFO, Verus



Alexander Arrow, MD
Independent Director

- CEO, Zelegent
- COO, Biolase
- CMO, Circuit Rx
- CFO, Arstasis
- Head Med Tech Equity, Lazard

Key Medical Advisors



David King, MD, LTC
Harvard Medical

- Trauma Surgeon
- US Army Lieutenant Col.
- Thought-leader in treatment of non-compressible hemorrhage



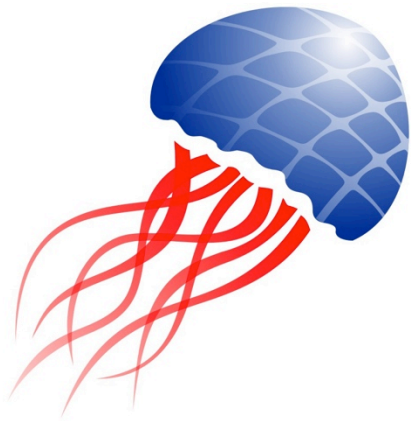
Mayur Narayan, MD, MBA
U of Texas Southwestern

- Trauma Surgeon
- Gold Doctor Awardee
- Medical Director of Center of Injury Prevention and Policy



Joel Buzy, MD, FACEP
Shady Grove Adventist ER

- Medical Director, Tactical and EMT Medicine Montgomery County, MD
- Partner, Medical Emergency Professionals
- Medical Director, ESPN X Games

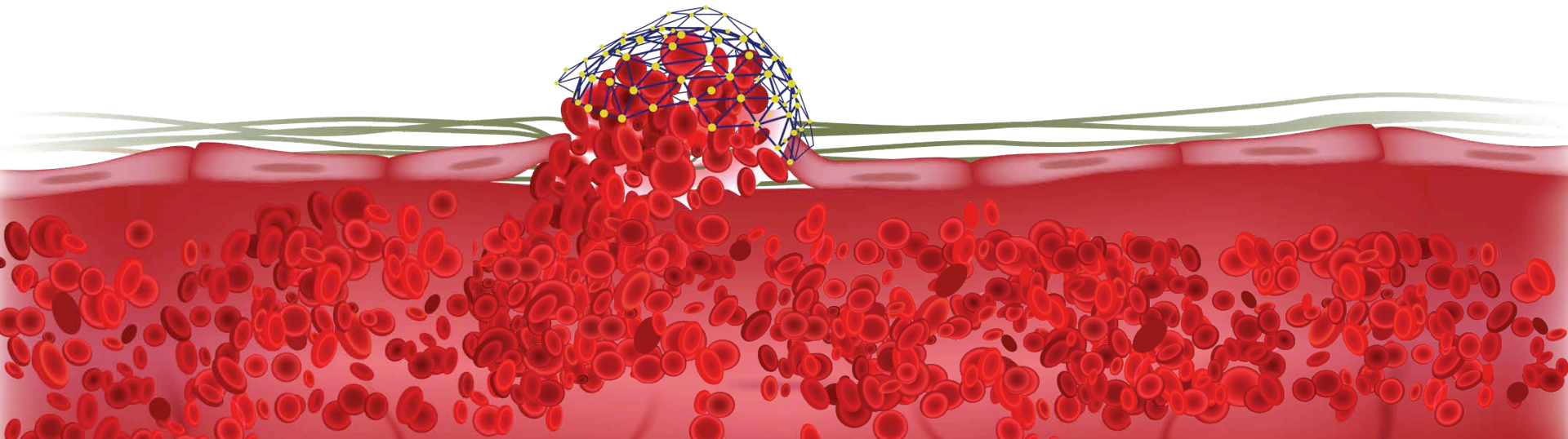


gel-e
Life Sciences

***A Next Generation
Hemostatic/Wound
Care Platform***

***Reducing the Cost of
Treatment with Stable,
Easy to Use Hemostats***

***A Novel Solution
to a Multi-Billion
Dollar Need***



Appendix



Appendix: *gel-e* has strong patent protection

U.S. Patent #	Patent Title	Patent Synopsis	Issue Date	Expiration Date
9,066,885	Advanced functional biocompatible polymeric matrix containing nano-compartments	HM-CHITOSAN FILMS for Wound Treatment	06-30-2015	10-05-2028
8,932,560	Advanced functional biocompatible polymeric matrix used as a hemostatic agent and system for damaged tissues and cells	HM-CHITOSAN SPONGES and SPRAYS for Hemorrhage Control	01-13-2015	07-11-2030
8,668,899	Advanced functional biocompatible foam used as a hemostatic agent for compressible and non-compressible acute wounds	HM-CHITOSAN FOAMS for Treatment of Non-Compressible Hemorrhage	03-11-2014	06-20-2030
8,664,199	Method and system for reversal of interactions between hydrophobically modified biopolymers and vesicles or cell membranes	CYCLODEXTRIN Powders and Sprays for CLOT REVERSAL	03-04-2014	12-04-2030
8,858,883	Method and system for capture and use of intact vesicles on electrodeposited hydrophobically modified biopolymer films	Electrodeposited HM-CHITOSAN FILMS for Wound Care and Hemorrhage Control	10-14-2014	12-02-2030



Appendix: Published in 6 peer-reviewed journals

Publication	Volume & Pages	Article Title	Authors	NCBI Ref#
Biomaterials	Vol 32, pgs 3351-3357	A self-assembling hydrophobically-modified chitosan capable of reversible hemostatic action	MB Dowling, R Kumar, MA Keibler, JR Hess, GV Bochicchio, SR Raghavan	PMID: 21296412
Journal of Trauma	Vol 72 (4), 899-907	Determination of efficacy of novel modified chitosan sponge dressing in a lethal arterial injury model in swine	GP DeCastro, MB Dowling, M Kilbourne, K Keledjian, IR Driscoll, SR Raghavan, JR Hess, TM Scalea, GV Bochicchio	PMID: 22491602
Biomaterials Science	Vol 2, 1016-1023	Reversible gelation of cells using self-assembling hydrophobically-modified biopolymers: toward self-assembly of tissue	V Jawwaji, MB Dowling, H Oh, IM White, SR Raghavan	--
Journal of Surgical Research	Vol 193 (1), 316-323	Hydrophobically-modified chitosan foam: description and efficacy	MB Dowling, W Smith, P Balogh, MJ Duggan, IC MacIntire, E Harris, T Mesar, SR Raghavan, DR King	PMID: 25016441
ACS Biomaterials Science & Engineering	Vol 1, 440-447	Sprayable foams based on an amphiphilic biopolymer for control of hemorrhage without compression	MB Dowling, IC MacIntire, JC White, M Narayan, MJ Duggan, DR King, SR Raghavan	--
Injury	In Press	Determination of efficacy of novel alginate dressing in a lethal arterial injury model in swine	MB Dowling, A Chaturvedi, J Gustin, SR Raghavan, TM Scalea, M Narayan	--