

### **DALE P. DE VORE, PH.D.**

Dale P. DeVore is currently serving as a contract Chief Scientific Officer for Sanova Bioscience, Inc. and continues to provide regulatory, clinical, and R&D consulting services to the pharmaceutical, medical device and tissue engineering industry. Until December 2008, Dr. DeVore was Vice President of Research & Development for BioForm Medical, Inc. (now Merz Pharmaceuticals), a medical aesthetics company with technology and products in dermatology and plastic surgery. Following his tenure at BioForm Medical, Dr. DeVore joined Euclid Systems Corporation assuming the role of Chief Scientist to develop novel collagen-based compositions for sustained delivery of ocular therapeutic agents. Dr. DeVore is a principal in several start-up ventures in the medical device/tissue engineering field. He recently served as a consultant for Clear Vascular, a company formed by Essex Woodlands Health Ventures to utilize Tin 117m for diagnosis and treatment of vulnerable plaque. He was also Scientific Director for Membrell and ECM Technologies, LLC developing and testing processed eggshell membrane to reduce pain associated with osteoarthritis. His own company, Xium, LLC was awarded a Phase I SBIR in 2004 to develop natural polymer systems to deliver drugs to the back of the eye. He was Project Director for a major hyaluronic acid manufacturer, Anika Therapeutics, Inc., to develop and clinically evaluate a hyaluronate product for soft tissue augmentation. This product gained FDA approval in December 2006. Prior to this assignment he was Executive Director of Government Programs for a small technology firm developing methods to attach enzymes to the skin surface to protect against penetration by nerve agents. Dr. DeVore was the principal investigator on a Phase II STTR contract from the Department of the Army. He was co-founder, Chief Scientific Officer, Senior Vice President of Research and Development, and a Director at Collagenesis, Inc., a Beverly, MA-based technology company commercializing tissue matrix systems, derived from processed human tissues, for use in plastic surgery and dermatology, otolaryngology, urology, orthopedics and drug delivery. Dr. DeVore was responsible for all FDA communications and submissions. Collagenesis evolved from Autogenesis Technologies, Inc., a small research & development company co-founded by Dr. DeVore and Dr. Charles D. Kelman, a world-renowned ophthalmologist from New York City. Prior to Autogenesis, Dr. DeVore was Vice President of Scientific Affairs at MedChem Products in Woburn, MA. He developed and patented a hyaluronic-based product called AMVISC PLUS, coordinated clinical studies, submitted appropriate documentation to FDA and obtained FDA clearance for this product now being sold by Bausch & Lomb for use as an adjunct to cataract surgery.

Dr. DeVore received his Ph.D. in 1973 from Rutgers University in New Brunswick, NJ. He subsequently joined Battelle Memorial Institute in Columbus, OH as a Research Biochemist. At Battelle, Dr. DeVore was awarded five NIH grants and two Arthritis Foundation grants. The latter grants focused on determining the mechanism of action of D-penicillamine as a remission-inducing drug to treat rheumatoid arthritis.

In 1979, while a Principle Research Biochemist and Group Leader of Cell & Molecular Biology at Battelle, he accepted a position with 3M's Riker Laboratories as a Research Specialist and Supervisor of the Connective Tissue Laboratory. Dr. DeVore's responsibilities were to develop *in vitro* and animal models to evaluate new Riker agents for treatment of rheumatoid arthritis. In 1981, he joined the Surgical Products Division to develop biomaterials for ophthalmic and orthopedic applications. In 1983 he was promoted to Senior Research Specialist and was responsible for programs in Collagen and Biopolymer Technology. From 1981-1985 he also held an academic appointment in the School of Dentistry at the University of Minnesota lecturing on connective tissue and continuing work on his NIH grant to characterize sea mussel adhesive proteins.

Dr. DeVore is generally regarded as one of the leading experts in the development, evaluation, and commercialization of natural polymer-based medical implants. Dr. DeVore has authored or co-authored more than 36 issued U.S. patents and more than 100 issued patents worldwide. In addition to his patents, he has more than 70 technical publications and several hundred technical presentations. He is a member of the Society for Biomaterials and the Association for Research in Vision and Ophthalmology and has been a member of American College of Rheumatology, American Burn Association, International Ocular Surface Society, American Urogynecologic Society and American Association of Tissue Banks. In addition Dr. DeVore has served on the Editorial Review Board of the *Journal of Long-term Effects of Medical Implants*. Dr. DeVore is a consultant to two healthcare venture capital organizations and is a member of scientific advisory boards. In 2015, Dr. DeVore was honored for "Excellence in Medical Device Consulting" by Worldwide Who's Who.

## BIOGRAPHICAL SKETCH

**Name: Dale P. DeVore, PhD**

**Executive/Consultant to the Pharmaceuticals/Medical Device/Tissue  
Engineering Industry**

**Address:** 3 Warwick Drive, Chelmsford, MA 01824

**Education:**

Rutgers University	B.S.	Biochemistry
New Brunswick, NJ		
Rutgers University	M.S.	Biochemistry
Rutgers University	Ph.D.	Biochemistry

**Employment:**

<b>Chief Scientific Officer</b>	<b>2016-present</b>
<b>Sanova Bioscience, Inc.</b>	
<b>42 Nagog Park, Suite 110</b>	
<b>Acton, MA 01720</b>	

Chief Scientific Officer and co-inventor of 4 provisional patents describing compositions for soft tissue augmentation and for improving skin appearance. Responsible for establishing the Sanova Bioscience, Inc. laboratory and for directing all research and development.

<b>Chief Scientific Officer</b>	<b>2014-2016</b>
<b>EternoGen, LLC</b>	
<b>1601 South Providence Road</b>	
<b>Columbia, MO 65211</b>	

Chief Scientific Officer and co-inventor of Eternogen's novel collagen composition for soft tissue augmentation and device coating. Responsible for executive management of research and development activities and assisting in regulatory and clinical activities including preparing CE mark documents and IDE/PMA documents for FDA review and approvals.

<b>Chief Scientist</b>	<b>2010-2015</b>
<b>Euclid Systems Corporation</b>	
<b>2776 Towerview Road</b>	
<b>Herndon, VA 20171</b>	

Chief Scientist, inventor and principal investigator for an ophthalmology company (1) developing biological agents and medical devices for stabilizing the human cornea following orthokeratology lens wear and post-LASIK procedures, and for treatment of keratoconus and (2) developing and evaluating collagen-based compositions for sustained drug delivery of ophthalmic agents to treat glaucoma and age-related macular degeneration. Responsible for assisting in the preparation and presentation of IND/NDA and IDE/PMA documents for FDA approval of novel biologic agents.

**Vice President of Research & Development**  
**BioForm Medical, Inc. (now Merz Pharmaceuticals)**  
**4133 Courtney Road, Suite 10**  
**Franksville, WI 53126**

**2004-2009**

Position on a ½ time basis serving as Vice President of R & D for a medical aesthetics company developing products for the dermatology, plastic surgery and otolaryngology markets. Responsible for directing development of new products and for interfacing with regulatory executives to prepare FDA communications, draft submissions, and present at FDA panel meetings.

**Anika Therapeutics**  
**Project Director-Soft Tissue Augmentation**  
**160 New Boston St., Woburn, MA 01810**

**2002-2004**

Responsible for leading development, preclinical and clinical evaluation of a crosslinked hyaluronic acid composition for soft tissue augmentation.

**Technical Advisor/Consulting**

**2005-Present**

**Histogenics Corporation**  
**830 Winter Street, Waltham, MA 02451**

Consulting services to establish a manufacturing facility to produce bovine collagen and collagen based sponges for delivery of autologous chondrocytes for cartilage repair.

**CollPlant, LTD**  
**2 Pekeris St**  
**Rehovot, 76122 Israel**

Senior Technical Advisor for CollPlant to assist in development and regulatory approval of pharmaceutical and medical device applications for human recombinant Type I Collagen derived from plants.

**BD Medical-Ophthalmic Systems**  
**411 Waverly Oaks Road, Waltham, MA 02452**

Technical advisor to BD Medical to evaluate acquisition of pharmaceutical and medical device products for use during cataract surgery.

**TauTona Research & Development Company**  
**4040 Campbell Ave., Suite 110**  
**Menlo Park, CA 94025**

Consultant to TauTona on projects to develop, test, and gain FDA approval for novel solid state hyaluronic acid compositions for application in aesthetic medicine. Product called Aline HA sold to Allergan.

**Davol, Inc.**  
**100 Crossings Blvd**  
**Cranston, RI 02886**

Technical advisor on projects to develop, evaluate, and commercialize porcine derived surgical meshes for soft tissue repair. Advisory responsibilities including coordinating viral clearance evaluations, drafting testing reports and reviewing documents for 510(k) submission and for EU approvals. CollaMend Implant received 510(k) clearance in 2006.

**Essex Woodlands Health Ventures**  
**717 Fifth Avenue, 14<sup>th</sup> Floor, New York, NY 10022**

Consultant to EWHV on drug delivery technologies and other product opportunities.

**The Innovation Factory**  
**2750 Premiere Pkwy, Suite 200, Duluth, GA 30097**

Consultant to The Innovation Factory on ophthalmic opportunities.

**Histogen, Inc.**  
**9855 Towne Centre Drive, San Diego, CA 92121**

Scientific Board Member

<b>Consultant</b>	<b>2006-2007</b>
<b>Clear Vascular, Inc. (Essex Woodlands Health Care Ventures)</b>	
<b>171 Fifth Avenue, 14<sup>th</sup> Floor</b>	
<b>New York, NY</b>	
<b>10022</b>	

Responsible for providing technical expertise in the area of collagen and other extracellular matrix constituents and identification of monoclonal and humanized antibodies reacting with these targets in vascular tissue, particularly vulnerable plaque.

<b>Founder and Partner</b>	<b>1999-2010</b>
<b>Xium, LLC</b>	
<b>3 Warwick Drive</b>	
<b>Chelmsford, MA 01824</b>	

Co-founder and Chief Technical Officer for a small company developing novel techniques to alter the biomechanical properties of intact tissues including cornea, skin and cartilage. Awarded Phase I SBIR to develop methods for transcleral drug delivery (Collaboration with Dr. Henry Edelhauser)

**Founder and Partner** **2001-present**  
**Collagen Matrix Technologies (CMT)**  
Boca Raton, FL

Holding company of intellectual property purchased from Collagenesis. Presently in discussions with several companies to license IP for dermatology, plastic surgery, and otolaryngology.

**Founder and Partner** **2001-2009**  
**CLN Diagnostics & Therapeutics**  
Oklahoma City, OK

Holding company for intellectual property purchased from Collagenesis. Completed development agreements with Alcon Laboratories and Genentech; currently developing polymeric systems for sustained delivery of drugs to treat back of the eye diseases, i.e. age-related macular edema. Recently sold drug delivery patents to an ophthalmology company and dissolved partnership.

**Independent Consultant to the Medical Device/Tissue Engineering Industry** **2001-2006**

- ▶ Consultant to a medical device company to direct development and clinical evaluation of a hyaluronic acid formulations for soft tissue augmentation.
- ▶ Consultant to a major dermatology company to assist in development, clinical evaluation, and FDA approval of synthetic polymers for application in dermatology and plastic surgery.
- ▶ Co-Principal Investigator for a Phase I SBIR project to formulate novel laser-activated collagen-based sealants for cardiovascular and orthopedic applications.
- ▶ Consultant to a pediatrics pharmaceutical company developing systems for oral delivery of pediatric pharmaceuticals.

**Executive Director of Government Programs** **2001-2002**  
**Pericor Science, Inc.**  
**One Kendall Square**  
**Cambridge, MA 02139**

Principal Investigator on a Phase II STTR contract from the Army Research Office to attach an enzyme to skin for protection against G-Type nerve gas. Preparing new applications for additional funding to develop and evaluate systems for protection against V-Type nerve agents, mustards, and other chemical warfare agents.

**Chief Scientific Officer, Senior Vice President of R & D,  
Co-founder and Member of Board of Directors  
Collagenesis, Inc.**

500 Cummings Center, 464C  
Beverly, MA 01915

**1995-2002**  
Closed as of  
1/01/02

Responsible for Regulatory and Clinical Affairs, Quality Systems, Intellectual Property and all R & D in Reconstructive & Plastic Surgery and Urology, Dermatology, Ophthalmology, Orthopedics and Drug Delivery. Developed and commercialized four products for urology and dermatology/plastic surgery. Initiated and completed marketing agreements with two major urology companies; CR Bard and American Medical Systems. Developed and directed programs to develop a viscoelastic solution to treat osteoarthritis. Directed joint programs to develop delivery systems for recombinant human bone morphogenetic protein and for stem cells. Active participant in financing activities resulting in investments of more than \$60 million from 1996-2001.

**Co-founder and Chief Scientific Officer  
Autogenesis Technologies Inc.**

125 Nagog Park, Acton, MA 01720

**1988-1994**

Responsible for directing R & D in development of tissue-based products for ophthalmology, orthopedics, plastic surgery and dermatology. Commercialized autologous, tissue-based product for plastic surgery/dermatology. Initiated and completed financing agreements with two large multinational corporations.

**Managing Director, Biomaterials  
Organogenesis Inc.**

150 Dan Road  
Canton, MA 02021

**1994-1995**

Responsible for evaluating the potential market for Organogenesis' collagen as a raw material for the device industry. Decisions regarding formation of a Biomaterials Division will be dependent on this evaluation.

**Vice President, Scientific Affairs  
MedChem Products, Inc.**

Woburn, MA 01801

**1985-1988**

Responsible for R & D, technical service, and regulatory affairs. Developed currently commercialized hyaluronan product for ophthalmic surgery. Prepared regulatory submissions for clinical studies (IDE) and product approval (PMA). Active in due diligence activities leading to the purchase of a leading collagen-based hemostatic product. Initiated clinical trials to evaluate hyaluronan to treat joint disorders.

**Senior Research Specialist  
3M, St. Paul, MN 55144**

**1983-1985**

Responsible for research and product development in ophthalmology and orthopedics. Participant in numerous corporate programs including the Industrial-University Relations, Special Programs, and the 3M Innovation Audit Committee.

**Research Specialist**  
**3M, St. Paul, MN 55144**

**1979-1983**

Established connective tissue laboratory to develop *in vitro* and animal models for evaluating pharmaceuticals to treat rheumatoid arthritis. Initiated projects to evaluate antioxidant agents to treat arthritis.

**Lecturer and Staff Member**  
**University of Minnesota, School of Dentistry**

**1980-1985**

Lecturer in School of Dentistry on connective tissue biochemistry

**Research Biochemist/Principle Research Biochemist/  
Group Leader in Cell & Molecular Biology**  
**Battelle Memorial Institute, Columbus, OH 43201**

**1972-1979**

Directed research in many projects including NIH grants on *Mechanisms of Sea Mussel Adhesive Formation*, *Electrically Induced Osteogenesis*, *Electric Stimulation of Bone Healing*, *In vitro Techniques to Monitor Pesticide Toxicity*.

Directed Arthritis Foundation Grants to examine the mechanisms of action of D-Penicillamine in treatment of RA.

### **Honors:**

3M Circle of Technical Excellence  
Who's Who in Frontier Science & Technology  
Who's Who in Medicine & Technology  
Who's Who Science and Engineering  
Who's Who in America

### **BOOKS AND CHAPTERS**

DeVore, DP, **The Etiology of Scarring and Wrinkle Formation**, In: *Applications of Biomaterials in Facial Plastic Surgery*, Eds. Glasgold, A and Silver, F, CRC Press, 1991

DeVore, DP, **Collagen as An Ophthalmic Biomaterial**, In: *Encyclopedic Handbook of Biomaterials and Bioengineering*, Eds. Wise, DL, Trantolo, DJ, Altobelli, DE, Yaszemski, MJ, Gresser, JD, and Schwartz, ER, Marcel Dekker, New York, Chapter 45, pp 1233, 1995.



DeVore, DP, Kelman, CD, Fagien, S, and Casson, P. **Autologen: Autologous, Injectable Dermal Collagen.** Chapter 65. In *Principles and Practices of Ophthalmic Plastic & Reconstructive Surgery, Volume 1.*, W.B. Saunders Company, New York, 1995, pp. 670-675.

Eiferman, RA and DeVore, DP, **Phototherapeutic Keratectomy**, Chapter 37, In: *Laser Corneal Surgery*, Eds. R Elander, LF Rich & JB Robin, WB Saunders Co, 1997, pp. 379-388.

Leopoldo, S, DeVore, DP, Eiferman, RA, DeWoolfson, B, Stewart, CW, Swartz, TS, and Wang, M. **New and Future Treatments: Excimer Laser Lamellar Keratoplasty and Advanced Crosslinking**, Chapter 18, In: *Keratoconus & Keratoectasia: Prevention, Diagnosis, and Treatment*, Ed. M. Wang and TS Swartz, Slack Inc., 2010, pp 177-185.

Cummings, A.B, Sinjab, M.M., Hatch, K.M., Talamo, J., Randleman, B., Kanellopoulos, A.J., Asimellis, G., Sakla, H., Altroudi, W., Rabinowitz, Y.S., Kilic, A., Ribinfeld, R.S., Ambrosio, R., El-Kateb, M, DeVore, D.P., Ross, M.A., DeWoolfson, B.H., and Dryjski, O. **Combined Corneal Crosslinking and Other Procedures: Indications and Application Models.** Chapter 4. In: *Corneal Collagen Crosslinking*, Ed. M.M Sinjab and A. Cummings. Springer International Publishing, Switzerland, 2016

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### **Original Papers, Chapters, Proceedings**

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2. DeVore, DP, Walter, JL, Carter, SD, and Boatman, JS. Glycosaminoglycans, collagen and elastin of the aorta of normal and hypothyroid neonate swine, *The Physiologist*, 18:721, 1974
3. Walter, JL, DeVore, DP, Carter, SD, and Boatman, JS. Regional permeability of normal and hypothyroid neonate swine, *The Physiologist*, 18:719, 1974
4. DeVore, DP and Solberg, M. A study of rate-limiting factors in the respiratory consumption of intact bovine muscle, *J. Food Science*, 40:561, 1975
5. DeVore, DP, Sheridan, MA, Pitman, JS, and Hutson, TB. Aldrin toxicity in cultured mammalian cells, *The Pharmacologist*, 16:721, 1976
6. DeVore, DP, Hutson, TB, Sheridan, MA, and Pitman, JS. Pesticide toxicity in cultured mammalian cells, *Toxicol. & Applied Pharmacol.*, 41:169, 1977
7. DeVore, DP, Gruebel, RJ, and Hutson, TB. The modulation of synovial collagenase by D-Penicillamine, *Fed. Proceedings*, 37:993, 1978
8. DeVore, DP and Gruebel, RJ. Dityrosine in adhesive formed by the sea mussel, *Biochem. Biophys. Res. Commun.* 80:993, 1979
9. DeVore, DP, Gruebel, RJ, Hutson, TB, and Turner, RH. Effects of D-Penicillamine on lymphocyte modulation of collagenase production, *Agents & Actions*, 9:172, 1979
10. DeVore, DP. Effects of D-Penicillamine on synovial collagenase production, *Scand. J. Rheumatology, Supplement-Proceedings of the 2<sup>nd</sup> Bertine Koperberg Conference on Fundamental Studies on Penicillamine for Rheumatoid Diseases*, September, 1978
11. DeVore, DP, Houchens, DP, Overjera, OO, Dill, GS, and Hutson, TB. Collagenase inhibitors retarding invasion of a human tissue tumor in nude mice, *Exp. Cell Biology*, 48:367, 1980
12. DeVore, DP. Inhibitors of connective tissue degradation and their potential as antiarthritics, *Ann. Report of Medicinal Chemistry*, 17:175, 1982

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14. DeVore, DP, Engebretson, GH, Schachtele, CF, and Sauk, JJ. Characterization of collagen from sea mussel byssal thread, *Comp. Biochem. & Physiol., Part B.*, 77B:529, 1984
15. DeVore, DP, Engebretson, GH, Schachtele, CF, and Sauk, JJ. Isolation characterization of adhesive proteins secreted by the sea mussel, *Mytilus edulis*. *Proceedings of the Sixth International Congress on Marine Corrosion and Fouling*, Athens, Greece, September, 1982
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17. DeVore, DP, Scholtz, MT, Scherrer, RA, and Medenhall, HV. Viscoelastic collagen for use in ophthalmic surgery, *Proceedings of the First Atlantic Congress on the Future of Collagen as A Biomaterial*, Lyon, France, 1985, p253
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22. Loftus, SA, Montplaisir, JM, Juo, J-W, and DeVore, DP. Comparison of the properties of hyaluronate products used in the treatment of joint dysfunction in horses, *J. Equine Vet. Science*, 8:117, 1988
23. DeVore, DP and Loftus, SA. Properties of hyaluronate solutions and their use as biomaterial implants, *Materials Res. Society Proceedings*, 110:455, 1989
24. DeVore, DP. The Etiology of Scarring and Wrinkle Formation, In: *Applications of Biomaterials in Facial Plastic Surgery*, Eds. Glasgold, A and Silver, F, CRC Press, 1991

25. DeVore, DP. Long-term compatibility of intraocular lenses implant materials, *J. Long-term Effects of Medical Implants*, 1:205, 1991
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## **PATENT LISTING**

### **I. MISCELLANEOUS ASSIGNMENTS**

<b><u>PATENT TITLE</u></b>	<b><u>PATENT NO.</u></b>
Collagen Reconstitution (Battelle Develop. Corp.)	4,242,291
Viscoelastic Collagen Solution for Ophthalmic Use & Method of Preparation (3M)	4,713,446
Viscoelastic Collagen Solution for Ophthalmic Use & Method of Preparation (3M)	4,851,513
Sodium Hyaluronate Composition (MedChem Products/Anika Therapeutics)	4,920,104
Sodium Hyaluronate Composition (MedChem Products/Anika Therapeutics)	03399156
Collagen-based Adhesives and Sealants and Methods of Preparation and Use Thereof (Surgical Sealants Inc.)	5,219,895
Method for Bonding Soft Tissue with Collagen-based Adhesives and Sealants (Surgical Sealants Inc.)	5,354,336
Method for Sealing Fluid Leaks in Tissue (C.R. Bard)	5,874,537
Methods and Products for Sealing a Fluid Leak In A Tissue (C.R. Bard)	6,183,498
Method for Preparation of Type II Collagen (AutoImmune, Inc.)	5,840,848
Methods and Apparatus for Accelerated Orthokeratology (Keratoform, Inc.)	6,161,544
Method for Localized Staining of Intact Corneal Tissue Surface (3D Vision Systems)	7,015,013



**MISCELLANEOUS ASSIGNMENTS (Continued)**

<b><u>PATENT TITLE</u></b>	<b><u>PATENT NO.</u></b>
Compositions and Methods for Stabilizing Corneal Tissues during or after Orthokeratology Lens Wear (Euclid Systems Corp.)	6,946,440
Composition for Stabilizing Corneal Tissue during or after Orthokeratology Lens Wear (Euclid Systems Corp)	ZL00815717.0 (China) U.S. Patent allowed (03/08)
Compound for Stabilizing Corneal Tissue During Or After Orthokeratology (Euclid Systems Corp)	7,402,562
Collagen-based Implants for Sustained Delivery of Drugs (Euclid Systems Corp.)	9,289,396
Method for Stabilizing Corneal Tissue (Euclid Systems Corp)	Publication 200901051682
Ultraviolet Irradiation to Treat Corneal Weakness (Euclid Systems Corp)	US Pat. App 1292 - Filed Mar 10, 2009
Methods to Increase Permeability of Corneal Epithelium and Destabilize Stromal Collagen Fibril Network (Euclid Systems Corp)	US Pat. App 12934310 - Filed Mar 18, 2009
Orthokeratology Lens Wear Combined with Chemical Treatment to Correct Myopia, Hyperopia, and Presbyopia (Euclid Systems Corp)	Provisional Filed
Composition and Methods for the Prevention and Treatment of Macular Degeneration, Diabetic Retinopathy, and Diabetic Macular Edema	WO2011069046 (A1) Filed June 09, 2011
Prevention of Myopia	WO2011031948 (A2) Filed Mar 03, 2011
Chemical Treatment of in vivo Tissue to Alter Charge and Net Charge Density (Xium, LLC)	US 20050106270
Light Energized Tissue Adhesive (Tissue Adhesive Technologies, Inc. "TAT")	6,875,427 B1

Method for Making A Light Energized Adhesive (TAT)	6,780,840 B1
Composite Tissue Adhesive (TAT)	6,939,364
Light Energized Tissue Adhesive Conformal Patch (TAT)	6,773,699
Preparation of hyaluronic acid from eggshell membrane (Membrell, LLC)	6,946,551
Therapeutic, nutraceutical and cosmetic applications for eggshell membrane and processed eggshell membrane preparations (Membrell, LLC)	US 20040180025
Methods and Therapies for Treating Inflammatory Conditions with Exposed Collagen (Clear Vascular)	9,623,129
Anti-inflammatory Activity of Eggshell Membrane And Processed Eggshell Membrane Preparations (Membrell, LLC)	8,580,315
Implantation Compositions for Use in Tissue Augmentation (BioForm, now Merz Pharma)	9,352,046
Injectable in situ polymerizable collagen composition (EternoGen, LLC)	U.S Patent Allowed

**PATENT LISTING-CONTINUED**

**II.      ORIGINALLY ASSIGNED TO AUTOGENESIS OR COLLAGENESIS  
(26 issued) Now assigned to Euclid Systems Corp or Collagen Matrix  
Technologies (CMT)**

<b><u>PATENT TITLE</u></b>	<b><u>PATENT NO.</u></b>
Biologically Compatible Compatible Collagenesis Reaction Products & Articles Useful As Medical Implants Produced Therefrom	5,104,957
Biologically Compatible Collagenesis Reaction Products & Articles Useful As Medical Implants Produced Therefrom	5,201,764
Biologically Compatible Collagenesis Reaction Products & Articles Useful As Medical Implants Produced Therefrom	5,480,427
Non-Biodegradable Two Phase Corneal Implant & Method For Preparing Same	5,067,961
Non-Biodegradable Two-Phase Corneal Implant & Method For Preparing Same	0443094
Non-Biodegradable Two-Phase Corneal Implant & Method For Preparing Same	69030874.4
Non-Biodegradable Two-Phase Corneal Implant & Method For Preparing Same	0443094 Italy
Non-Biodegradable Two-Phase Corneal Implant & Method For Preparing Same	0443094 Switzerland
Non-Biodegradable Two-Phase Corneal Implant & Method For Preparing Same	0443094 United Kingdom
Human Collagen Processing & Autoimplant Use	4,969,912
Human Collagen Processing & Autoimplant Use	5,332,802
Human Collagen Processing & Autoimplant Use	0330389 Belgium
Human Collagen Processing & Autoimplant Use	1,336,812
Human Collagen Processing & Autoimplant Use	0330389 France
Human Collagen Processing & Autoimplant Use	68928051.3

**ORIGINALLY ASSIGNED TO AUTOGENESIS OR COLLAGENESIS (26 issued) Now assigned to Euclid Systems Corp or Collagen Matrix Technologies (CMT)-Continued**

<b><u>PATENT TITLE</u></b>	<b><u>PATENT NO.</u></b>
Human Collagen Processing & Autoimplant Use	0330389 Italy
Human Collagen Processing & Autoimplant Use	0330389 Switzerland
Human Collagen Processing & Autoimplant Use	0330389 United Kingdom
Collagen-Based Viscoelastic Solution For Visco-Surgery	5,631,243
Method of Making Intraocular Lenses With Injectable Collagen-Based Compositions	5,476,515
Collagen Modulators For Use In Photoablation Excimer Laser Keratectomy	5,492,135
Collagen Modulators For Use In Photoablation Excimer Keratectomy	5,861,486
Collagen Modulators For Use In Photoablation Excimer Keratectomy	6,204,365
Compound Delivery using Rapidly Dissolving Collagen Film	6,197,934
Collagen-based Delivery of Radioactivity for Use In Brachytherapy	6,299,856
Processing Animal Tissues	6,743,435

**Note: Not all OUS Patents are listed above**

**Completed Research Support:**

Kentucky Enterprise Fund: CIF-1063-ICC  
Eggshell Membrane for Wound Healing

9/2008-8/2009

Phase I SBIR  
NIH/NEI  
Transcleral Delivery of Drugs from a Collagen Matrix System  
Role: PI 1 R43 EY015588-01

7/1/04-12/31/05

Phase I SBIR  
NIH/NIDDK  
Development and testing of infrared laser activated protein solder formulations for tissue welding of surgical mesh to treat intraperitoneal defects  
Role: Co-Investigator-Protein solder formulation

11/01/02-5/31/03

Phase I SBIR  
NIH/NEI  
Phase I SBIR project to fabricate collagen-based corneal allografts and to evaluate these grafts in the rabbit model.  
Role: PI

1994

Phase I SBIR  
NIH/NIAMS  
Development and testing of infrared laser activated protein solder formulations to treat cartilage defects  
Role: Co-Investigator-Protein solder formulation

4/15/02-10/15/02

Phase I STTR: C-DAAD19-00-C-0109  
Army Research Office  
Phase I project to develop and test methods to covalently link agents to the stratum corneum. Preliminary experimentation to evaluate linkage of genetically engineered, fluorescent-labeled OPAA to the surface of fresh cadaveric human skin. In vitro studies conducted to demonstrate activity of bound OPAA.  
Role: PI

8/15/00-2/15/01

Phase II STTR: DAAD19-02-C-0047  
Army Research Office Proposal-42727-CH-ST2  
Collaborative project with ECBC to optimize methods to couple a genetically engineered organophosphorous acid anhydrolase (OPAA) to the stratum corneum of skin to provide protection against G-type nerve agents.  
Project includes phase I animal testing to determine the effectiveness of bound OPAA in hydrolyzing active G-type nerve agents  
Role: PI

3/20/02-9/30/02

**Pending Research Support**

Phase I SBIR submission  
Corneal Reshaping for Long-term Myopia Correction

Submitted 7/3/2014

**Completed Research Support prior to 1985:**

NIH-RO1 Grants

Mechanisms of Sea Mussel Adhesive Formation (2)

Electrically Induced Osteogenesis

Electric Stimulation of Bone Healing

In vitro Techniques to Monitor Pesticide Toxicity