

Mike Sherman

**MB Innovations, 516 Tennessee St, Suite 215, Memphis, TN 38103 | msherman@mbi-memphis.com
5854 Haymarket Rd, Memphis, TN 38120 | (901) 359-1014 | mikesherman901@gmail.com**

Summary

I have over 35 years of experience in the medical device industry having spent over 25 years in orthopedic product development rising from a product development engineer to an executive leadership position responsible for driving new technology in to the spine industry's largest company. I created and led Medtronic Sofamor Danek's new technology development group which combined spinal implant product development of next generation technologies and a business development effort for the division. From there I spent 9 years as a medical device venture capitalist focused at identifying and building a diverse portfolio of early-stage musculoskeletal device and technology companies.

Currently I own and operate MB Innovations (MBI) in Memphis TN. MBI is a medical device design, development & consulting firm providing outsourced product development services to clients primarily in the orthopedic industry, specifically Spine, Trauma, Extremities, Joint Reconstruction and Sports sectors of orthopedics.

Prior to Medtronic Sofamor Danek, I held product development positions at both Synthes and Smith & Nephew, both focused at developing orthopedic trauma implants for internal & external fracture fixation.

My experiences in product development, marketing, regulatory, business development, executive leadership and venture capital have provided me with a unique skill set and a discerning perspective on the role for new technologies within the medical device industry and the musculoskeletal sector in particular. During my career, I have developed a talent for assessing new technology and leveraging them with existing products or capabilities into new products with new and broader capabilities.

I have deep sector expertise in spine and orthopedics and the ability to visualize how new technologies and emerging surgical methods can be integrated to provide new and enabling products to address unsolved or poorly solved clinical needs.

I am a named inventor on over 125 issued US patents and, most with international counterparts and numerous applications in prosecution.

Education

BS Biomedical Engineering | Rensselaer Polytechnic Institute, Troy NY | May 1983

MS Biomedical Engineering | University of Texas Southwestern Graduate School of Biomedical Sciences, Dallas TX | Dec 1984

(formally: The University of Texas Health Science Center at Dallas)

Master thesis entitled:

Biomechanical Factors Affecting Fracture Stability and Femoral Bursting in Closed Intramedullary Rod Fixation of Femur Fractures

Experience

MB Innovations Inc, Memphis, TN

2017 - Present President & CEO

I founded MBI in December 2011 while I was a Partner at MB Venture Partners. I have been the Executive Chairman of MBI since inception. In January 2017, I assumed the role of President & CEO. MBI is a medical device design, development & consulting firm providing outsourced product development and strategic services to clients, primarily in the musculoskeletal sector. In June of 2018, I acquired 100% of the stock of MBI.

Independent Consultant, Memphis, TN

2016

During the period between MB Venture Partners and MB Innovations, I provided consulting serves to several clients in the musculoskeletal sector. My involvement with the MB Ventures portfolio companies eventually led to my role as President & CEO of MB Innovations.

MB Venture Partners, LLC, Memphis, TN

2016 – Present Venture Partner (in-active)

2006 – 2015 Partner

In September of 2006 I joined MB Venture Partners, a Memphis based venture capital firm focused on medical devices. At MB Ventures, I led numerous investments and served on portfolio company Boards. At the end of 2015 I departed the day to day role of Partner but continue to serve as a Venture Partner to MB and on the Boards of my portfolio. Accomplishments at MB Venture Partners (MBVP) have included: (i) the founding of MB Innovations a design and development group in Memphis, (ii) turning around Veracity Medical, a precision medical device manufacturer from a debt-laden, money losing business onto a debt-free profitable business and exiting the business, (iii) being the sole venture investor in Hubble Telemedical which was launched and ultimately acquired (by Welch Allyn) in the course of three years and most recently, (iv) exiting a nine year investment in a sports medicine business, Cayenne Medical (acquired by Zimmer Biomet).

Medtronic Sofamor Danek, Memphis, TN

1999 - 2006 Vice President of Technology Development, Medtronic Sofamor Danek

1998 - 1999 Group Director of Product Development, Sofamor Danek

1992 - 1998 Director of Product Development, Sofamor Danek

1991 - 1992 Senior Engineering Manager, Danek

The bulk of my career and inventive efforts have been devoted to developing and commercializing implants, instruments and surgical methods dedicated to the treatment of spinal disorders (trauma, tumors, deformity, neural compression & instability). These efforts have resulted in over 120 issued US patents encompassing approximately 60 unique inventions. The implants commercialized from these inventions have impacted the lives of hundreds of thousands of individuals and generated hundreds of millions of dollars in revenue for Medtronic. Starting in 1999 and until I departed Medtronic in September of 2006, I held the position of Vice President of Technology Development, a dual role combining responsibility for technical & business due diligence on acquisitions and investments within Medtronic Sofamor Danek and responsibility for directing a dedicated team of engineers tasked with identifying, gaining access and driving new technologies into the organization by providing “out-of-the-box” solutions to challenging clinical problems. While most of this work is distributed broadly throughout the field of spine, there were a few concentrated efforts in the fields of, minimally invasive spine surgery

instruments & methods (Sextant), fusionless scoliosis therapies (staples & tethers) and flexible spinal stabilization (tethers & polymers).

Smith & Nephew – Richards, Memphis, TN

1989 - 1991 Senior Product Development Engineer

In 1989, I joined Smith & Nephew (Richards) as the Sr. Product Development Engineer on the Ilizarov external fixation system. At the time, distraction osteogenesis was just being introduced to North American surgeons. While at S&N, I worked closely with the KOLs, traveled with surgeons to programs including Kurgan, Russia and developed & launched numerous new components for the system including radiolucent, carbon fiber reinforced components.

Synthes (USA), Paoli, PA

1988 - 1989 Product Development Engineer

1986 - 1988 Associate Product Manager

1985 - 1986 Biomedical Engineer

I started my career in orthopedic trauma product development with Synthes USA, the US arm of the AO/ASIF (Association for the Study of Internal Fixation) a Swiss organization that brought an elevated level of science to fracture repair worldwide. While at Synthes I developed and commercialized early versions of cannulated screws, carbon fiber reinforced external fixation rods and early spinal instrumentation systems. My efforts at Synthes stretch beyond product development. I had marketing and product management responsibilities and assembled many of the regulatory submissions myself, interacting with FDA directly. It was at Synthes that I submitted my first Investigational Device Exemption (IDE) to FDA. Also at Synthes I was awarded my first US Patent, 4,887,596: *“Open Backed Pedicle Screw”*.

Honors and Selected Professional Service

1984 - 99 American Society of Mechanical Engineers (ASME)

1985 - American Society of Testing and Materials (ASTM)

1987 - Orthopedic Research Society (ORS)

1999 - North American Spine Society (NASS)

2001 Medtronic Technical Contributor of the Year, Awarded for the SEXTANT Percutaneous Rod Insertion System (Team award)

2001 Bakken Society Induction: An honor society, representing Medtronic's highest recognition for technical achievement

Intellectual Property

Patents Over 125 issued US patents, many with foreign counterparts. The majority of my inventive efforts have been focused within the field of spinal implant & instrument product development. My patent portfolio is available upon request.

Board of Directors Assignments

Anulex Technology, Minneapolis MN: Director **2007 - 2016** (Wound down 6/16): Anulex had developed products to repair the annular defects in the intervertebral disc encountered or created during spinal discectomy procedures. The company was commercial stage when it encountered regulatory difficulty.

Cayenne Medical, Scottsdale AZ: Director **2006 - 2016** (Acquired by Zimmer Biomet 5/16): Cayenne Medical designs, develops and markets technically advanced soft tissue reconstruction solutions for the knee, shoulder, and extremities. Cayenne is focused on the transformation of traditional arthroscopic procedures by applying innovative technology through minimally invasive techniques. Cayenne recently expanded beyond its traditional sports medicine offering to include a partial knee arthroplasty system.

Expanding Orthopedics, Or Akiva, Israel: Director **2007 - 2018** (Acquired by CoreLink 5/18): EOI developed and marketed innovative products designed to address unmet clinical needs for spine care. EOI amassed a broad IP portfolio around anatomically fit, expandable devices for enhanced stability and fixation through a low profile, minimally invasive approach. EOI focused in the area of Expandable devices with pedicle screw and interbody device product lines.

Hubble Telemedical, Knoxville TN: Director **2011 - 2015** (Acquired by Welch Allyn, who was subsequently acquired by Hill Rom): Hubble Telemedical was founded by Ed Chaum MD PhD, an academic Ophthalmologist and retinal specialist in collaboration with Oakridge National Laboratory. Together they developed an automated technology to provide diagnosis of retinal images remotely. Diabetic retinopathy is the single largest cause of new blindness in adults. Hubble is dedicated to enabling earlier detection of systemic and debilitating diseases that manifest in the retina. Together with the CEO, Dr. Chaum and I guided Hubble through a challenging business and reimbursement environment to a successful exit. In mid 2014, we were approach by Welch Allyn and ultimately acquired in Jan 2015.

MB Innovations, Memphis TN: Founder & Exec Chairman **since 2011**, President & CEO since Jan 2017 (Acquired by management in June 2018): MB Innovations, Inc ("MBI") is a contract product developer and incubator focused at musculoskeletal innovations. MBI will perform research, design and development as well as provide strategic services for established firms on a fee-for-service basis. MBI will also create its own technologies and intellectual property that will be the basis for new venture formation and job creation.

Tidal Wave Technology, Memphis TN: Director **2012 – 2016** (Wound down 12/17): Tidal Wave is an early-stage company developing a method and device to achieve a circumferential ablation of the nerves that surround the renal artery. This is accomplished without placing any ablative elements within the renal artery or damaging the inner linings (intima) of the renal artery or abdominal aorta. TWT is highly capital efficient.

Veracity Medical Solutions, Memphis TN: Director **2011 – 2017** (Acquired by Heron Capital 12/17): Veracity Medical Solutions is a contract manufacturing company specializing in the medical device industry. Veracity provides design and development services in addition to prototyping, manufacturing and other services.

Zyga Technology, Minnetonka, MN; Director **2008 – 2015**, Observer 2015 – 2018 (Acquired by RTI Surgical 1/18): Zyga was founded in 2008 to develop a novel technology for resurfacing the zygapophyseal (facet) joint. This idea to relieve pain while preserving motion in the facet joints became the Glyder Facet Restoration Device. In 2009, Zyga saw a new need: a minimally invasive method to fuse the SI joint. Thus, the SImmetry Sacroiliac (SI) Joint Fusion System was designed, developed and launched to help stabilize the SI joint in an MIS manner.

Zero-To-510 Accelerator, Memphis TN; The Zero-to-510 (ZT510) accelerator was created under the umbrella of the Memphis Bioworks Foundation and funded by both MB Venture Partner and Innova. Partners

in both firms took Board positions on the firms that moved through the accelerator program. As a result of this involvement, I had several additional Board assignments (Urova & Nanophthalmics to name a few)

Marrow Access Technologies, Minneapolis MN: Director **May 2020 – Dec 2022**: MAT developed and markets the SmartShot® marrow access device, a first-line treatment for getting patients with cartilage defects back in action. Used for standalone marrow stimulation therapy or with biologics, it delivers double the marrow access of traditional microfracture with less disruption to native bone in a novel, easy-to-use device.

Publications:

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2. Johnson KD, Tencer AF, **Sherman MC**: Biomechanical Factors Affecting Fracture Stability and Femoral Bursting in Closed Intramedullary Nailing of Femoral Fractures with Illustrative Case Presentations. J Orthop Trauma; 1987:1:1-11.
3. Johnston CE, Ashman RB, **Sherman MC**, Eberle CF, Herndon WA, Sullivan A, King AGS, Burke SW: Mechanical Consequences of Rod Contouring and Residual Scoliosis and Sublaminar Segmental Instrumentation. J of Orthop Research; 1987:5:206-216
4. Tencer AF, Johnson KD, **Sherman MC**: Biomechanical Considerations in Intramedullary Nailing of Femoral Shaft Fractures Techniques. Orthop 1988:3(3):1-5
5. **Sherman MC**, Tencer AF, Johnson KD: Biomechanical Variables Affecting Stability and Stresses in the Fractured Femur During Intramedullary Nailing. Intramedullary Rods: Clinical Performance and Related Laboratory Testing, ASTM STP 1008 Philadelphia, PA; 1989, pp 87-107
6. Lewis G, Drewry TD, **Sherman MC**: A Thoracic Spine Testbed For the Comparative Biomechanical Evaluation of Spinal Instrumentation J. Spinal Disorders Vol 8. No. 3 pp 186-194 1995
7. Drewry TD, **Sherman MC**, Lewis G: Biomechanical Comparison Between Single and Dual Rod Texas Scottish Rite Hospital (TSRH™) Posterior Scoliosis Constructs: An Experimental Stress Analysis. Presented at The 30th Annual Meeting of the Scoliosis Research Society. Asheville, NC, September 13-16, 1995.
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9. Huntington CF, Betz RR, Maxy P, Clements III DH, Drewry TD, **Sherman MC**, Pafford JA: Biomechanical Finite Element Analysis of Spinopelvic Fixation in Long Segment Spinal Fixation Constructs. Presented at The 66th Annual Meeting of the American Academy of Orthopaedic Surgeons. Anaheim, CA, February 4-8, 1999.
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11. Betz RR, Cunningham B, Selgrath C, Drewry TD, **Sherman MC**: Preclinical Testing of a Wedge-Rod System for Fusionless Correction of Scoliosis. SPINE, Vol. 28 No. 20, 15 OCT 2003, pp S275-278.