Vendor Profile

huMannity Medtec Fulfills Alfred Mann's Medical Visions

by Jeremy Koff, senior consulting editor

In 1985, serial entrepreneur Alfred E. Mann set out to solve a problem that has long plagued the medical technology industry: promising inventions often fail not because they lack scientific merit, but because they cannot survive the long, capital-intensive journey from laboratory concept to commercial product.

To bridge that gap, Mann created the Alfred E. Mann Foundation for Scientific Research—not as a traditional philanthropic foundation, but as an engineering-driven institution designed to build medical technologies and spin them out into companies capable of bringing them to market. Today the organization continues under the name huMannity Medtec. Drawing on Mann's experience across aerospace, semiconductors, and medical devices, AMF assembled a vertically integrated team of engineers, scientists, and business leaders working under one roof to develop technologies from concept through prototype and ultimately into commercial ventures. Along the way, the organization generated more than 600 patents and over $10 billion in cumulative shareholder value.

A Founder Who Never Stopped Starting Over

Mann's career was defined by remarkable invention and persistence.

In the 1950s and 1960s he built Spectrolab and Heliotek, leaders in spacecraft power and solar cells. By the 1970s he had shifted to medical devices, founding Pacesetter Systems in cardiac pacing. This transition from aerospace to medical devices reportedly began on a tennis court with a cardiologist from Johns Hopkins who complained about the then short (18-month) lifespan of pacemakers.

In the 1990s came two of his most influential ventures: MiniMed, which revolutionized insulin delivery, and Advanced Bionics, a leader in cochlear implants and later spinal cord stimulation.

Many of these ventures were eventually acquired by strategic buyers. Medtronic acquired MiniMed (which included its spinoff, MRG) in 2001 for a combined $4.1 billion, Boston Scientific purchased Advanced Bionics in 2004 in another multibillion-dollar transaction, and Sonova later acquired its cochlear implant business from Mann and the shareholders in 2009 (the cochlear implant business had reverted back to the shareholders following litigation over Boston Scientific's alleged breach of contract). More recently, AMF's implantable drug pump program was sold to Medtronic for an undisclosed amount, and Axonics was acquired by Boston Scientific for $3.7 billion in 2024.

Mann's method was consistent: identify an underserved market with few competitors and bring a superior product to market. More often than not, he liked to enter markets where larger incumbents had already spent countless millions educating physicians and patients and achieving regulatory and reimbursement successes, allowing Mann's products to enter as fast followers once markets had been validated.

The First "Venture Studio"?

From its original base in Sylmar, CA—later expanded to Valencia—AMF focused on developing medical technologies and translating them into commercial ventures. Initially funded by Mann's personal successes and later sustained through the outcomes of its own spinouts, the organization operated much like what would now be described as a venture studio—conceiving ideas internally and building companies from the ground up, well before the model became widely recognized.

Over time, the organization and its affiliated ventures seeded or accelerated a remarkable portfolio of technologies across multiple medical fields, including Advanced Bionics, for cochlear implants and neurostimulation; Axonics, for sacral neuromodulation; Bioness, for functional electrical stimulation and neurorehabilitation; MannKind, for inhalable insulin; Medallion, intrathecal pump for pain, spasticity, and diabetes; MiniMed, for insulin pumps and glucose sensors; Pacesetter Systems, for pacemakers; Quallion, for implant-grade and aerospace rechargeable batteries; and Second Sight, for retinal and cortical prostheses.

Over time, liquidity events from several of these ventures generated capital that could be reinvested

into new development programs, reinforcing the idea that an incubator could repeatedly create and spin out commercially viable medical technologies.

A Near-Death Experience

Alfred Mann passed away in February 2016, having long indicated that little of his fortune would go to his children and that AMF would be a primary beneficiary of his estate. In 2005, *Forbes* ranked him 125th among the wealthiest Americans.

At the time of his death, however, much of his wealth was directed to a separate family foundation, Alfred E. Mann Charities, Inc., which over the years has made a few contributions supporting the healthcare ecosystem but leaving AMF without the level of financial support it had anticipated, forcing significant layoffs and debt.

To sustain operations, management negotiated an unusual financing arrangement that effectively used the potential proceeds of AMF's long-running patent litigation against Cochlear Ltd. as collateral (more on this below). The organization operated under strict austerity while awaiting the outcome of that litigation and several other potential liquidity events.

Relief ultimately came through three major developments. First, AMF prevailed in its decade-long patent infringement case against Cochlear. Second, the Foundation sold its implantable drug pump program to Medtronic. Third, Axonics completed a successful IPO in 2018 and was later acquired by Boston Scientific. Together, these events restored the non-profit's financial footing and allowed it to continue pursuing Mann's original mission of translating difficult engineering challenges into commercial medical technologies.

The Axonics program exemplifies the AMF model in action: an internally developed technology aimed at a market long dominated by a single incumbent—Medtronic—with established reimbursement pathways and a trained clinician base. AMF spun out the company alongside its internal technical co-founder, Guangqiang (Jay) Jiang, who served as CTO, recruited veteran medtech executive Ray Cohen as CEO, and, roughly a decade later, achieved one of the largest strategic exits in neuromodulation.

Successes—and Lessons in Failure

Alfred Mann believed that many of medicine's hardest problems were ultimately engineering challenges—ones that could be solved with enough capital, the right team, and the persistence to see them through. Yet his career also illustrates an important reality for medtech entrepreneurs: technical success does not always translate into commercial success.

MiniMed offers one example. While the company's insulin pumps became a major commercial success (and his biggest single payout), its first continuous glucose monitoring system—approved in 1999—failed to gain traction. The concept would later be refined by others, most notably Dexcom, which ultimately built the modern CGM market. The experience highlighted a common lesson in medical technology: being first to a breakthrough does not guarantee long-term market leadership.

Second Sight illustrates another challenge frequently faced by medtech pioneers: creating a viable market around a groundbreaking technology. The Argus II retinal prosthesis achieved regulatory approval in both Europe and the United States and secured reimbursement of roughly $144,000 per patient for individuals with retinitis pigmentosa—for the first time in history helping over 400 blind patients to once again see. Yet the company struggled to gain traction due to several factors, including modest clinical benefit in its first-generation devices, significant ongoing capital requirements, and a relatively small initial market—underscoring that even transformative technologies require alignment across product performance, market scale, capital efficiency, and strategic positioning to fully realize their commercial potential.

Other ventures reflected similar dynamics. Bioness, a pioneer in functional electrical stimulation, required substantial investment and was ultimately sold at a valuation below the capital invested. MannKind, which developed inhaled insulin, achieved important technical milestones but faced prolonged commercial headwinds following launch. The Bion microstimulator, developed at Advanced Bionics, was an early leader in miniaturized implantable neuromodulation—arguably ahead of its time—but its trajectory was ultimately curtailed after the company's acquisition by Boston Scientific, which discontinued the program. Additional ventures with compelling technical promise—including Roundtrip and Implanted Acoustics—similarly struggled to achieve successful commercialization. Notably, each of these efforts fell short for different reasons, underscoring the complexity of translating innovation into durable market success.

Taken together, these experiences reinforce a central reality for medtech entrepreneurs: breakthrough engineering alone is rarely sufficient. Commercial success is ultimately determined by market size, reimbursement pathways, timing, and—critically—the capital required to sustain prolonged development cycles. Mann himself summarized this bluntly, often noting that the five most important factors in building a medical technology company are capital—followed by capital, capital, team, and technology.

Bridging the Valley of Death Around the World

Mann's ambition to translate ideas into commercial medical technologies extended beyond the Alfred E. Mann Foundation itself. He envisioned replicating the AMF model within major research universities. His goal was to endow as many as twelve universities with up to $100 million each to establish Alfred Mann Institutes dedicated to ideation, product creation, and ultimately turning academic discoveries into commercially viable medical products.

To identify the right university partners, Mann assembled what he described as a "dream team" of early-stage commercialization experts to evaluate potential institutions. Ultimately, three institutes were launched: the Alfred E. Mann Institute at USC, endowed with $165 million; and the Technion Alfred Mann Institute in Israel, funded with $100 million. Purdue University was slated to receive another $100 million but ultimately received only a fraction of that amount, as the broader university endowment program was curtailed due in part to Mann's substantial personal capital investment in MannKind and challenges inherent in replicating the model within university environments.

In practice, however, translating the AMF model into university-based institutes proved difficult. Case in point, the USC Alfred E. Mann Institute flourished for years as a respected academic innovation center, but it produced relatively few, if any commercially successful spinouts. Over time, the institute moved away from its original venture-building mission, and in 2023 USC shut down the institute, transferring its remaining assets to the university's Office of Research and Innovation to support broader research and commercialization activities.

Changing of the Guard

While Alfred Mann provided the vision and much of the capital behind the Alfred E. Mann Foundation, a succession of leaders helped translate that vision into technologies that reshaped multiple areas of medicine and continue to do so today.

Joseph Schulman, Mann's first president and chief scientist at AMF (and employee #1 of Mann's first medtech venture, Pacesetter Systems), led the organization for more than two decades after joining in 1985. During his tenure, the institute advanced several landmark technologies, including insulin pump systems, cochlear implant innovations, and implantable stimulation platforms that drew on Schulman's earlier work on rechargeable pacemakers and other active implants. Schulman passed away in 2020.

David Hankin, who served as CEO from 2007 through July 2017, oversaw continued expansion of the organization's neuromodulation and implantable device programs. During this period the non-profit advanced rechargeable neurostimulation technologies and helped develop the sacral neuromodulation platform that later became Axonics. Hankin, a lawyer by training, also played an important role in managing the intellectual property portfolio, including key patents related to cochlear implant technology.

John Petrovich then served as President and CEO from late 2017 through March 2021, guiding the organization through a financially difficult period after Mann's death. During his tenure, AMF's long-running patent litigation against Cochlear reached its conclusion, ultimately resulting in approximately $268 million in damages and roughly $75 million in attorneys' fees following the appeals process.

Robert Greenberg, who has served on the non-profit board since 2004 and as non-executive chairman since December 2004, moved into a full-time executive role in 2018 and continues to guide the organization today as chairman and CEO as it expands its work in neuromodulation and broader medtech technologies.

During his tenure, he has overseen the sale of the implantable pump system to Medtronic, supported the spinout of new neuromodulation ventures including IVEAcare, and advanced several new internal programs, while also recruiting new leadership to sharpen the organization's operational focus.

A Repeatable Machine

Viewed across four decades, the Alfred E. Mann Foundation stands out as a repeatable engine for tackling difficult engineering problems in medicine.

Today that legacy continues under the organization's new name, huMannity Medtec.

Some of its technologies—insulin pumps, cochlear implants, and rechargeable sacral nerve stimulators—have become industry-defining products. Others, including retinal prostheses and neurorehabilitation platforms, struggled commercially but still pushed technical boundaries and helped open new fields.

For Mann, that asymmetry was acceptable: building more bridges across the "valley of death" meant that, over time, more patients would benefit. Even two weeks before his passing, when this author had the opportunity to see him, though physically frail, he still reached into his pocket to show his latest invention—a next-generation inhalable device. He was still thinking about new ways to address unmet medical needs.

Today, huMannity Medtec continues to define its mission succinctly: nurturing novel neurotechnologies "from promise to product." With renewed capital and new hires, the organization has rebuilt its infrastructure and remains one of the few institutions capable of guiding implantable technologies from early engineering through first-in-human trials.

In many ways, huMannity Medtec reflects Mann's own philosophy: bold ideas, long timelines, and the recognition that while not every breakthrough succeeds commercially, the cumulative impact of persistent innovation can ultimately reshape entire fields of medicine.

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