

Steve Dubin

Martek Biosciences (Now a Division of DSM Nutritional Products)

**Statement before U.S. House of Representatives, Committee on Science, Space and
Technology, Subcommittee on Technology and Innovation**

“Creating and Growing New Businesses: Fostering U.S. Innovation”

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I would like to thank Honorable Ben Quayle, Chairman of the Subcommittee on Technology and Innovation, House Committee on Science, Space and Technology, Ranking Member Donna Edwards, and members of the Committee, for holding this hearing today and for allowing me to share my perspective on promoting new business creation and growth in innovative sectors.

Introduction

My name is Steve Dubin and I served as the CEO of Martek Biosciences, a biotech company based in Columbia, Maryland, from July 2006 until a few weeks ago. My involvement with Martek began in 1985 while I was serving as Vice President of Suburban Capital Corporation, the venture capital subsidiary of Suburban Bank (now part of Bank of America). It was in that capacity that I helped lead Martek's initial round of institutional venture financing in 1986. I joined Martek as an employee in 1992, initially as CFO and General Counsel, and went on to fill a variety of additional roles there, including Treasurer, Secretary, and Senior Vice President of Business Development. In 2003, I was appointed President of Martek and in 2006 I assumed the role of CEO.

When I was first introduced to Martek, Martek was, by every definition, a start up. It consisted of five talented founding PhDs with a fantastic idea, and a foundation of technology to drive that idea forward – and a long, difficult road ahead. Today, Martek Biosciences Corporation (now DSM Nutritional Lipids) is a leader in the innovation, development, production and sale of high-value products from microbial sources that promote health and wellness through nutrition. The company's technology platform consists of its core expertise, broad experience and proprietary technology in areas such as microbial biology, algal genomics, fermentation and downstream processing. This technology platform has resulted in Martek's development of a number of products, including the company's flagship product, *life'sDHA*[™], a sustainable and vegetarian source of omega-3 DHA (docosahexaenoic acid) important for brain, heart and eye health throughout life for use in infant formula, pregnancy and nursing products, foods and beverages, dietary supplements and animal feeds. The company also produces *life'sARA*[™] (arachidonic acid), an omega-6 fatty acid, for use in infant formula and growing-up milks. Martek's *life'sDHA*[™], along with *life'sARA*[™], is found in 99 percent of U.S. infant formulas. Both fatty acids are also added to infant formulas sold in over 80 countries and, subsequently, have been consumed by more than 64 million babies worldwide. In addition, a range of supplements and functional foods containing *life'sDHA*[™] for older children and adults continues to hit the market both in the U.S. and abroad. Martek's subsidiary, Amerifit Brands, develops, markets and

distributes branded consumer health and wellness products and holds leading brand positions in each of its three key product categories. Martek's technology platform has also made it a sought-after partner on a range of groundbreaking projects in process, including the development of microbially-derived biofuels, new, faster and less expensive ways to make vaccines and the development of DHA-containing oilseeds.

Factors in Martek's Success

Finding private financing for early stage research was extremely difficult in Martek's early days, and is even more difficult today, but since Martek's inception, a range of government supported and funded programs – both at the state and federal level – have played a critical role in Martek's survival and growth. This support was leveraged to raise over \$400 million from the capital markets to enable Martek to reach its current state. Without programs like the Small Business Innovation Research Grants, the University of Maryland Technology Advancement Program, and even NASA, I would not be standing here today to share our story of success.

NASA

Martek had its start in a NASA program of the early 1980s known as CELSS (Closed Environment Life Support System). Under NASA funding, Martin Marietta Laboratories, Inc., in Baltimore, Maryland, experimented with the use of microalgae as a food supply, a source of oxygen and a catalyst for waste disposal on future human-crewed planetary missions. When Martin Marietta decided to divest its life sciences businesses, the scientists involved in this project negotiated with Martin Marietta to take what they had learned with them and start their own company. The result was Martek Biosciences, founded in 1985.

Soon after, Martek identified a strain of algae, *Cryptocodinium cohnii*, that is a naturally high producer of docosahexaenoic acid (DHA), an omega-3 fatty acid that plays a key role in infant brain and eye development as well as in maintaining brain, eye and heart health throughout life. Martek then developed and patented a sustainable method of deriving DHA-rich oil from the algae. Continuing its exploration of infant nutrition, Martek also developed a patented process for developing arachidonic acid, ARA, another fatty acid important to infant health, from *Mortierella alpina*, a fungus. These innovations led to Martek's first license agreement in 1992 for the use of Martek's proprietary blend of DHA and ARA in infant formula. In 1993, Martek went public after entering into similar license agreements with two additional leading infant formula companies. Today, nearly every infant formula product sold in the U.S. contains these ingredients, as well as infant nutrition products found in over 80 countries around the world, and millions of infants benefit from these products each year.

In 2009, Martek was inducted into the Space Foundation's Hall of Fame. The Space Foundation, in cooperation with NASA, honors organizations and individuals who transform technology originally developed for space exploration into products that help to improve the quality of life here on Earth. Martek is one of just a few dozen technology companies that have been inducted since the Hall of Fame was founded 20 years ago, and Martek's evolution from a NASA funded-project to a successful, independent company providing important, beneficial products to

consumers worldwide is often heralded as the ideal example of practical innovation born from the Space Program.

Small Business Innovation Research Funding

In many ways, Martek is also an ideal example of how SBIR funding can be the foundation of success for early-stage companies. For the first eight years of our existence, SBIR grants were our lifeblood -- Martek received more than 30 SBIR awards from DOD, DOE, HHS, USDA, and NSF totaling more than \$5 million.

This funding allowed us to more fully develop our platform of technology and, perhaps more importantly, provided a measure of validation of our technologies, allowing us to demonstrate our capabilities and secure additional venture capital funding and strategic partners. SBIR funding not only helped us to keep our doors open in the early years, it also provided the foundation of credibility necessary to convince investors that our company was a sound investment.

Earlier this year, Martek was inducted into the inaugural Small Business Innovation Research (SBIR) Hall of Fame in recognition of its success in research, innovation and commercialization within the SBIR program.

Technology Advancement Program (TAP) and Maryland Industrial Partnerships (MIPs)

Martek is a graduate of a business incubator, the Technology Advancement Program at the University of Maryland at College Park, a program of the Maryland Technology Enterprise Institute (Mtech.)

Incubators typically offer office space at market or lower rates, along with shared conference and lab facilities, and offer business development and management programs to accelerate their startups' growth.

Martek came to the program with a number of notable characteristics, including a talented scientific team with demonstrated skills, a unique niche market, and the technology to drive forward within that niche.

Through the incubator, Martek accessed specialized facilities and equipment that Martek otherwise would not have been able to afford, that served as a pilot development lab for its early products. Those facilities became a scale-up lab for much of Martek's early work, where company researchers could determine whether a number of individual cells they had grown in the lab were scalable to a larger market. Indeed, they were.

TAP provided much more than access and support. In fact, a primary reason Martek was funded in 1986 was because we had been accepted into TAP, which provided a notable third-party validation of the feasibility of our technology to be commercialized.

In addition to TAP, Martek leveraged Maryland Industrial Partnerships (MIPS) funding during the company's early stages to figure out how to scale-up its microbial processes through Mtech's Bioprocess Scale-Up Facility (BSF), which helps companies take bench-top or lab-produced products and prepare them for mass production.

Maryland's programs have served as best-practice models around the country. TAP was the first incubator in Maryland; there are more than 20 now. Many universities have replicated the programs within Maryland's portfolio; two other state research funding programs were based on MIPS.

This support for entrepreneurs has translated into concrete economic benefits for Maryland. In addition to the success of Martek, other TAP graduates such as Digene have continued to expand and add jobs in Maryland. The latest data from the Maryland Technology Development Corp indicates that Maryland's incubators have supported more than 14,000 jobs and generated more than \$104 million in state and local taxes.

Martek was an inaugural inductee to the Maryland Incubator Company "Hall of Fame" and we are often held up as a powerful example of the success that business incubators can produce through work with start-ups. It is very hard for early stage companies to get off the ground. Martek certainly went through many struggles and near-death experiences over the years. Every day is a struggle when you are trying to get started. To have a support system like an incubator gives you a better chance for success. It is my hope that companies like Martek can serve as a positive example of success so that programs like TAP will continue to have support. If the resources that were available to Martek during our early years were available to entrepreneurs on a national level, I believe there would be many more success stories like ours.

NIH

In 2006, Martek's flagship product, DHA, was the subject of a research project funded by a \$10.5 million research grant from NIH.

Sponsored by the National Institute on Aging (NIA), one of the 27 Institutes and Centers of NIH, the study explored whether DHA supplementation slows the progression of cognitive and functional decline in patients with mild to moderate Alzheimer's disease. This study was funded by a NIA/NIH grant to the Alzheimer's Disease Cooperative Study (ADCS), a cooperative agreement between the NIA and the University of California San Diego that was founded to advance research in the development of drugs that might be useful for treating Alzheimer's, particularly those therapies that might be overlooked by industry. Approximately \$10.5 million of the ADCS grant was earmarked to fund the DHA study.

This funding was another important marker of credibility for Martek, and the study also provided important insights into the use of DHA to treat memory loss that may provide the foundation for future research and products.

Barriers to Success

For the past 27 years, I have been involved in the financing or management of early-stage companies, as a co-manager of two small early-stage venture capital (VC) funds, as a member of the management teams of two companies while they were raising VC (including Martek Biosciences), and as an individual angel investor. Unfortunately, the economic dynamics of today's venture funds have resulted in larger and larger funds that are less and less able to provide early-stage funding.

Large funds cannot efficiently put small amounts of money to work and usually need to return money to their investors within the 10-year life cycle typical of most VC limited partnerships. This process will not work for early stage technology companies seeking smaller initial rounds of financing and is especially bad for life-science based companies that often take many years to create an exit event for their investors. At Martek Biosciences, we raised four rounds of venture capital between our founding in 1986 and 1992. We did not have an exit event until after we went public in late 1993. Because of our long product development life cycle, which is typical for life sciences firms, we did not become profitable until 2002 – 16 years after our first venture round.

In today's economic environment, it is not likely that a company could go public so long before profits are anticipated, so early-stage investing in most life-sciences companies is outside the exit timeframes of most VC firms. Right now, many science firms are in danger of running out of money more so than any time in my years working in the industry. The lack of early-stage funding not negatively impacts employment and growth in an important industry sector, but also has other long term negative effects -- new discoveries will not be made, diseases will not be cured, jobs will not be created and the financial spillover from these companies will not occur.

In my opinion, in today's environment, a company like Martek would have a much slimmer chance of survival. But if government can develop ways to help promote early-stage, long-term venture investing that would help fill the funding gap for early stage research, particularly for science and non-IT companies that are in critical need of this kind of support, then we will see many more success stories like Martek in the future.

In Conclusion

Martek is a great example of how government supported programs and funding can be a critical differentiator between the success and failure of early-stage companies. I, along with the entire Martek team, are personally aware of the ways in which programs that I have discussed in my testimony today can serve as lifeblood during critical times of a start-up company's evolution. In 1985, Martek had a fantastic idea, an amazingly talented team, and the energy and drive to take the seed of an idea from inception to commercialization, resulting in the thriving business that Martek is today. Our made-in-the-USA products benefit millions of consumers every year and meet an important demand for healthy, sustainable nutritional ingredients. In addition, our technology has provided the foundation for other important projects including improved vaccine development and microbial biofuels. Our business today produces revenue in excess of \$470 million per year and supports more than 600 employees in Maryland, South Carolina, Colorado,

Kentucky and Connecticut, and more than 100 additional employees at DSM's Belvidere, New Jersey, manufacturing facility. Without the above-mentioned programs that were available to Martek, I am certain that the company and the jobs that support many families today would not exist.

We are now entering yet another phase of our evolution. Earlier this year Martek announced that it had been acquired by DSM, a leading global life sciences and materials sciences company. The sale price was more than \$1 billion. In partnership with DSM, we expect to continue our significant growth, significantly increasing U.S. jobs and revenues.