



May 13, 2021

RE: Congressional Committee on Small Business, hearing titled “Overview of the Small Business Innovation Research and Small Business Technology Transfer Programs”.  
Written Testimony by Pat Keady.

I would like to thank Chairwoman Nydia Velázquez, Ranking Member Blaine Luetkemeyer and the entire Committee on Small Business for inviting me to testify.

My name is Pat Keady. I am CEO and President of Aerosol Devices Inc, a small-women-owned business incorporated in 2014 in the State of Colorado. We develop advanced sampling and measurement instruments sold primarily to scientists studying the chemical and biological properties of airborne particles. Our method of gently collecting aerosolized viruses, including SARS-CoV-2, is considered by leading scientists to be the best approach for determining whether airborne virus is present as well as the infectivity, or viability of such viruses. In 2020 our collector technology was used in one of the key studies, referred to by the New York Times as "A Smoking Gun" (Mandavilli, <https://www.nytimes.com/2020/08/11/health/coronavirus-aerosols-indoors.html>), demonstrating that viable aerosolized SARS-CoV-2 was confirmed in a hospital room with COVID-19 patients. This study and our technology likely saved lives due to the profound implications on the debate about masking during the pandemic.

In 2020 we had revenue of \$2.17M, approximately half in product sales and half in grants. We have 11 employees including 9 with science or engineering degrees. We have been named by BizWest magazine as one of the 50 fastest growing private businesses in Northern Colorado two years in a row, ranking #1 in our size class in 2019.

Most people recognize that starting a company is no easy task and often requires significant financial resources. This is especially true when developing a physical product that requires design, prototypes, testing, patents, regulatory approvals, tooling and inventory. Having a good idea for a product that customers will buy is essential but is certainly not sufficient for achieving economic success. We are no exception.

Ninety-six percent of the startup funding for our company came from the personal assets of the two co-founders, including myself. Our startup capital totaled \$587K. This amount covered the commercial development of our first product, but was insufficient for product refinement, global marketing or continuing new product research and development. This is the point in our company history where the SBIR/STTR program came in with necessary and greatly appreciated financial assistance. Without this support I am not sure the business could have survived.

Since our first NSF STTR Phase I grant was awarded in 2017, we have been awarded six Phase I, three Phase II, and two subawards for a total of \$4.68M. Nearly half of our grants were awarded in just the past 12 months to address the COVID pandemic threat, and to provide early warning of a bioterrorist attack. With an NSF grant awarded one year ago, we fast-tracked development of a compact, easy-to-use virus sampler targeted for use in medical facilities, schools, nursing homes, offices – all industries that are particularly vulnerable to COVID transmission. The product was launched into the market last week. The COVID-focused developments for environmental samplers, direct-read monitors and breathalyzers can also be used for measurement of other respiratory pathogens such as seasonal influenza and tuberculosis. Our grant funding has come from five different Federal agencies demonstrating the versatility that our platform technology has for addressing a wide variety of industry and societal needs. These agencies include National Science Foundation, Department of Energy, National Institutes of Health, Department of Defense/Defense Logistics Agency and Department of Homeland Security. Of the \$4.68M that has been awarded, just \$2.23M has been spent as of March 31, with \$2.45M remaining. Approximately half of the funding is a pass through to our university and industry collaborators. We have partnered with five public universities and three companies, two of which are also small private businesses. The university collaborations support graduate students and help to build our nation’s intellectual capital. Other products at least partially funded by the grants include three patent applications, two PhD theses, three refereed publications and dozens of conference and seminar presentations, with many more to come.

Our primary interest lies in developing commercial products, not simply doing cool research projects. We look forward to the day when we can fund our own internal research and development without government support. Writing grant proposals and the reporting requirements in managing the projects is a considerable effort for a small company. A weakness in the SBIR/STTR model is that there is no true funding to launch a product -- what is called “commercialization”. Because of this shortfall we are actively seeking an outside investor. Bringing on an investor has its own set of complications and is not the right path for all businesses. Until we reach that critical revenue milestone where we can fully self-fund, we are grateful for the financial assistance of the SBIR/STTR programs. As a primary employer, our goal is to offer an increasing number of good-paying jobs and sell quality products to customers around the world. We aim to provide an exceptional return on the taxpayer investment.

The SBIR/STTR grants have been a lifeline for our small early-stage company. I strongly encourage Congress to continue and strengthen this vital program that provides essential funding for America’s entrepreneurs and helps de-risk technology for potential investors. Thank you. I look forward to your questions.