



Good morning Chairman Blum, Ranking Member Schneider, and distinguished Members of the Small Business Committee. I am Mark Kester, the Chief Scientific Officer of AgroSpheres, a biotechnology company located in Charlottesville, Virginia. I would like to also acknowledge six members of the AgroSpheres team who are here with me today. We thank you for calling attention to Agriculture Technology entrepreneurship and for inviting us here to tell the story of AgroSpheres. We would like to share what we have learned during the process of taking our company from a student project in my lab at The University of Virginia to a real-world company that just closed a seed round of funding. AgroSpheres Inc, is an AgBiotech company based in Charlottesville, VA working on nanotechnology enabled environmentally friendly biocontrols.

AgroSpheres is a true success story. In a very short time, we have taken a concept and turned it into a reality. When UVa students, Ameer Shakeel and Payam Pourtaheri conceptualized the technology, they realized that they had come across something special. They had a "solution" but needed to find a problem. Ameer and Payam initially wanted to target the pharmaceutical space with their nano "solution". I advised them that the runway was too long to develop a pharmaceutical application and that there was "lower hanging fruit". They took this advice and adapted the technology to make a pesticide-degrading spray to address the problem of residual pesticide contamination.

Being from a region in Virginia rich in viticulture, we reached out to our local vineyards to understand how pesticide contamination was affecting our community. After visiting many sites, it was clear that the problem of residual pesticide contamination limited the capability of farmers to harvest premium quality products and posed a health risk to workers during the harvesting process. Farmers saw such great value in our technology that multiple vineyards and one apple orchard even agreed to allow us to run small-scale field trials and generate our first field-trial data for our technology. The willingness for small farms in our community to work with us was key to the early stages of our success.

As we transitioned from a laboratory concept company to a company now in the marketplace looking for commercialization partners, we began to learn more about what we had developed. We learned that the market place and farmers were more interested in products that grant crop protection in a more environmentally friendly manner. With this new market information, we went back to the lab and developed a three-stage approach to safer crop protection. First, we would make synthetic pesticides protected and targeted, reducing the amount sprayed, drift, and run-off. Second, we would look for partners that have currently developed biocontrols that are lacking field delivery mechanisms. Lastly, we would develop our own, next-generation biocontrols for crop protection to take to market independently.



While exploring different uses for our technology, we continued to build on our initial assumption of the platform's versatility. We have developed a platform that has the ability to encapsulate synthetic chemicals, encapsulate or express biocontrols, and form a natural adhesiveness to plants for a more targeted delivery. We are most excited about the biopesticide industry because we are a one-stop shop that can create the biocontrols, encapsulate and protect the biocontrols, and engineer proteins on the outside of our capsule to target the intended plants. Our products are created through bacterial engineering and produced through the cheap and scalable process of bacterial fermentation. Most importantly, the AgroSpheres product delivers the biocontrol without any genetic material.

I also would like to highlight some of the successes that we have had along the way as we have morphed a concept into an agricultural biotechnology company. Our first milestone was licensing our pesticide-degrading technology from the University of Virginia. This meant that we now had value as a standalone company. Next, we started pitching investors and after a few months closed our seed round of financing. Then we used our newly acquired funds to purchase equipment and outfit our new lab in our home in Charlottesville. Lastly, we signed our first corporate research contract where a company is funding us to encapsulate one of their synthetic biocontrol chemicals. Our next steps are continuing to produce data validating our technology, find a partner in biocontrols for Agriculture, and hopefully, receive some SBIR funding!

We have many factors that have contributed to our success but would like to highlight a few:

- Creating a team of young motivated entrepreneurs with diverse backgrounds allows us to attack problems from many different angles. We have various science backgrounds, business backgrounds, and a faculty entrepreneur. Our young entrepreneurs changed career paths from going to medical or graduate school to pursue AgroSpheres.
- Engaging farmers and crop protection companies early to define and modify the product and initial company vision based on market need. Potential customers were much more generous with their time, information and resources than we initially thought. Without this initial generosity, we would not have been able to confirm our platform's versatility.
- Entrepreneurial competitions provided us the much-needed gap financing between technological development and equity funding. This non-dilutive funding gave us the ability to pay expenses and explore the technology and different end markets before approaching investors with inadequate information. When we needed money for an experiment, to pay a lawyer, or to run a field trial, we would look for a competition that we thought that we could enter and win.



In closing, I want to leave the committee with a couple of final thoughts that could help early-stage AgTech companies going forward.

- Public funding for company incubators or accelerators. At the University of Virginia, we have an iLab incubator that is funded by the University of Virginia and its donors. This program was immensely helpful to our development, providing office space, entrepreneurial mentorship, and contacts.
- Strengthening Federal, State and most importantly local grant opportunities for commercial ag research and development. If we had the ability to receive short-term funding to bridge the gap between technology conception and equity funding, we would have devoted more time to the rapid development of the technology and less time to the competitions that were a necessity for survival.
- We have applied for a couple of SBIR grants regarding different commercialization opportunities, but as startups move quickly and adapt to real time market feedback, it would be helpful if the evaluation timeline was expedited and shortened. This would allow us to incorporate this funding into our future planning.

In closing, I would like to thank you again for inviting AgroSpheres here today to share our experiences. I look forward to answering any questions you might have.