

Bringing Innovative Foods to Market

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Food is a rapidly changing landscape with many emerging technologies; meat without the cow, eggs without the chicken and sushi without the fish to name a few. These products come from advanced biotechnology, deeply rooted in technology used for pharmaceutical production. Key compounds are commonly produced by aseptic fermentation and standards require pure products, with no contamination. Only the target organism can exist in the broth at the end of a fermentation.

Alternatively, traditional food production has been developed from centuries of farming animals and plants, harvesting and processing as needed to allow storage in a manner to be safe to eat. Based on natural processes, food products are not typically pure, containing microorganisms, with items like yogurt having them as a key ingredient. Can these two different approaches emerge into a successful novel food industry?



The primary question is what type of company these ventures are, biotechnology or food? Without question, they are first and foremost a food company. Maintaining this understanding is critical to commercial success. The technology learnings from pharmaceutical and advanced biotechnologies are valuable, but that technology must fit within the food regulatory framework to become commercial. This can be a frustrating journey for many, but can be achieved by having a broad mix of backgrounds involved, including food industry expertise.

Some specific lessons learned commercializing novel foods follows:

Don't fight City Hall – the food regulatory approval process can seem foreign and often does not make sense to people with a long history in pharmaceutical production. The GRAS approval process is a prime example. There are many in the novel food industry that assert the process does not make sense and the standards are not appropriate. My advice? Complying with the current regulations is your fastest and most cost effective path to commercial success. If you want your model to be based on “blowing up the status quo” like UBER, make sure you raise billions like UBER has. If your series A round is \$7-\$15 million like most of the industry, I suggest finding a way to work inside the process.

Food Certification – One of the biggest challenges for novel food companies is to scale their process in a manner consistent with food safety regulations, including production at a facility permitted to manufacture food. Most advanced biotechnology host sites used to scale-up fermentation technologies are not approved for food production, which brings a complexity to the process that needs to be managed. The basic technology can be demonstrated at these sites, but the ability to taste product and provide market samples is significantly hindered.

Fermentation is just the beginning – While fermentation is often the key technology to producing the novel food product, it is usually just one step in an overall process. Much like an engine is key to operating a car, an engine without a body and wheels is of no value either. The ability of fermentation to be matched with the proper recovery and purification process, and scaled-up as a system, is key to a commercially viable operation.

Scale-up options are limited – Early stage technology companies are continuously faced with the choice of building their own demonstration scale-facility or contracting with an existing facility. As most ventures discover, this is a difficult choice between two costly and time consuming options. Building a demonstration-scale facility typically costs tens of millions of dollars, however finding a cost effective contract manufacturing location can be as challenging. The number of available facilities has been declining in recent years, at the same time early stage biotechnology companies are raising impressive amounts of cash to commercialize their technology.

Scale the technology and the market – Scale-up is an engineering process that demonstrates the technology will work at a larger scale and drives much of the requirements for a demonstration scale facility. What is often missed is the need to seed the market at the same time. Proving a product can be made to meet cost and quality targets is great, but unless the market draw is demonstrated at the same time, the ability to raise the next-level of funding will be limited. This manifests itself if the need for a larger demonstration stage than often forecasted to fulfill both needs.

The key to novel food companies being successful is bridging the gap between biotechnology and traditional food. The emerging novel food technologies are robust and exciting, with the ability to focus development efforts into the existing food regulatory environment key to becoming commercially viable.

Mark Warner is a registered professional engineer with 30 years of experience in process commercialization, focusing for the last 10 years on taking first-of-a-kind-technologies from bench-top to commercial operation. He is a leader in commercialization of innovative food products, working for industry leaders such as Solazyme (TerraVia) and Impossible Foods. Mark is the founder of Warner Advisors, providing consulting services and acting in interim engineering leadership roles for advanced bioeconomy clients. He can be reached at mark@warneradvisorsllc.com or for more information, visit www.warneradvisorsllc.com.