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Food Tech Patents: Who's on the Board and What Moves are they Making?

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The alternative (alt-) animal products industry is growing increasingly more popular each year, causing an increased demand in foods made from plant proteins or cultured in a lab. As more alt-animal products emerge, the amount of food tech patents increases and the food tech patent landscape becomes more and more complex. In this article, we will provide a distillation of the patent portfolio of the biggest market players in the U.S. food tech industry and some startups, which are starting to build their own food tech patent portfolios.

Given the relatively young age of this industry, most of the alt-animal product patents have not yet been tested in litigation. However, as we have previously reported, food-tech pioneer, Impossible Foods Inc. (Impossible Foods) filed the first-ever U.S. patent infringement lawsuit in the food tech industry, against Motif Foodworks Inc. (Motif), a Massachusetts-based start-up, in 2022. And in response, Motif filed several IPRs seeking to invalidate Impossible Foods' heme-protein patents. We will continue to follow this case and report on new developments.

Impossible Foods

Impossible Foods is one of the early entrants to the alt-protein food tech industry. The company was founded in 2011 and launched its first alt-meat product, the Impossible Burger, in 2016. Impossible Foods touts its Impossible Burger as using 96% less land, 87% less water, and emitting about 89% less greenhouse gas for its production than beef patties.¹ Impossible Foods' alt-meat products are currently sold in the U.S. in grocery stores across the country, and are available in a wide range of restaurants from fast food restaurants to Michelin-starred restaurants.

Impossible Foods has one of the largest patent portfolios in the alt-animal products industry with more than 200 global patent applications and over 100 granted patents worldwide. Hemeproteins are at the heart of Impossible Foods' patent portfolio with several granted claims covering a food product with "a heme-containing protein."² Impossible Foods also has patents covering processes and other products that are related to making the final food product (in addition to the food product as well).³

As we discussed in our previous article, Impossible Foods is currently engaged in a lawsuit with Motif and Motif has also filed several petitions with the PTAB challenging six of Motif's heme patents.⁴ This lawsuit is not the only test of Impossible Food's global patent portfolio. In 2018, Reiser & Partner Patentanwälte mbB requested a different Impossible Foods patent (EP14737766) to be re-examined. The opponent is requesting complete revocation of the

patent due to inadmissible extension, insufficient disclosure, lack of novelty, and lack of inventive step. The patent was revoked on December 19, 2022; however, Impossible Foods filed its Notice of Appeal on February 17, 2023.

Beyond Meat

Beyond Meat was founded in 2009 and went public in 2019.⁵ Even though it was founded before Impossible Foods, Beyond Meat, formerly incorporated as “Savage River, Inc.,” has a much smaller global patent portfolio. However, it is more prolific in the trademark space and has filed for over 100 trademarks covering various “Beyond” products.⁶ Beyond Meat’s alt-animal products are currently sold in the U.S. in grocery and convenience stores across the country, and are also available in fast food restaurants. As of December 31, 2022, Beyond Meat had two issued U.S. patents, and 7 patents outside the United States (U.K., Indonesia, Canada, China, Chile, Israel, and Australia). It also had two pending patent applications in the United States, 8 pending international patent applications, and one provisional patent application.⁷

In contrast to Impossible Foods, Beyond Meat does not use heme proteins to achieve the sensory characteristics of animal products. Rather, its patents are directed towards “meat structured protein products,” which use, *inter alia*, cell-wall material to form protein networks that are able to mimic the texture of animal products.⁸

Eat Just

Eat Just was founded in 2011 and was formerly known as Hampton Creek. Eat Just Inc. is another early entrant to the alt-protein industry.⁹ Its patent portfolio is focused on making animal product-like foods using mung bean and adzuki bean protein compositions and AI-based systems for identifying plant proteins for food applications.¹⁰ Overall, like Beyond Meat, Eat Just has a smaller global patent portfolio including 4 granted US patents and 7 U.S.–published patent applications. Its lab-grown chicken became the first cultured meat worldwide to gain regulatory approval in Singapore.¹¹ Additionally, lab-grown meat also received FDA approval in late 2022.¹² Eat Just’s alt-animal products are currently sold in the U.S. in grocery stores across the country, and its products can be found in a variety of restaurants all over the world.

NotCo

NotCo is a Chilean foodtech company founded in 2015.¹³ It has already experienced strong commercial success in South America, and is one of the region’s fastest-growing foodtech companies.¹⁴ In 2020, it launched its NotMilk product in the U.S. market in Whole Foods.¹⁵

Additionally, between 2019 and 2021, NotCo was granted several U.S. patents covering “Giuseppe,” NotCo’s AI system designed to “learn from open source and proprietary databases” and use a prediction model to source plant-based ingredients to be used to match a target animal-based food item.¹⁶ Interestingly, NotCo took a different approach to its patent portfolio as its 13 granted U.S. patents and 8 pending patent applications are all directed towards methods for generating formulas and recipes rather than for the product or formulation itself.¹⁷

Start-Ups

While the early entrants had a head start in commercializing products, building patent portfolios, and gaining regulatory approval, they are not the only innovators in the alt-protein food industry. Recently, numerous start-ups have started to enter the space with promising new approaches to alt-meat tech.

For example, Upside Foods, formerly known as Memphis Meats, together with the University of Missouri, has several U.S. patents and pending patent applications directed toward culturing meat products grown *in vitro*.¹⁸ The lab-grown meat product gained FDA approval in November 2022.¹⁹

Another example is Perfect Day, also called Muufri, which has four granted U.S. patents covering: (1) a food composition that mimics the “taste, aroma, appearance, handling, mouthfeel, density, structure, texture, elasticity, springiness, coagulation, binding, leavening, aeration, foaming, creaminess, and emulsification” of dairy products using recombinant beta-lactoglobulin protein and recombinant alpha-lactalbumin protein; and (2) substitute dairy compositions comprising casein.²⁰ It also has several pending applications and granted patents covering casein and other milk proteins.²¹ Its alt-dairy products can already be found in restaurants and grocery stores across the U.S.²²

Other players in this growing industry include the following: Ripple Foods (which has two granted U.S. patent and several published U.S. patent applications directed toward alt-dairy products)²³; New Wave Foods (which has one published U.S. patent

application directed toward alt-seafood)²⁴; WildType (which is focused on developing lab grown sushi grade salmon)²⁵; Alpine Roads (which has five U.S. patents and several published U.S. patent applications directed towards alt-milk proteins)²⁶; Clara Foods (which has five U.S. patents and several published U.S. patent applications directed towards alt-animal proteins)²⁷; Shiru (which recently launched OleoPro™, a protein-based alternative fat ingredient for use in alternative protein food products)²⁸; Eat Meati™ (which uses mushroom root to create its version of alt-meat)²⁹; Current Foods, Inc. (which has a PCT application directed to a protein gel composition)³⁰; and Better Meat Co. (which has one patent and two pending patent applications directed to edible mycelium clended meats and meat analogue).³¹ Globally, emerging companies coming out of Asia, Europe, and Australia are also entering the food tech space.³²

Conclusion

Innovation in the growing alt-animal products space has caused food tech pioneers and startups to protect

core aspects of their technologies through the patent system, which helps such companies strengthen their respective positions in the market and build IP assets in the process. These IP assets may be useful in leveraging licensing deals and preventing competitors from infringing on patent-holders' claimed technologies, making them strong line items on a company's balance sheet. We will be monitoring how this space develops in the coming months and years including with respect to whether the increase in technological advancements, sales activity, and new entrants will also increase the occurrences of patent infringement and concomitant patent litigation activity.

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