

KnipBio Announces Agreement with Ghent University to Commercialize Aquaculture Immunostimulant Feed

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(Lowell, MA) November 9, 2017. – [KnipBio, Inc.](#) today announced it has entered into an agreement with Ghent University to license the Belgian university's research on the use of prebiotics to promote health in the aquaculture and agriculture industries. Under the terms of the agreement, KnipBio has the exclusive right to use the research conducted on poly- β -hydroxybutyrate (PHB) by Ghent University's Laboratory of Microbial Ecology and Technology. PHB is a powerful bacterial storage polymer of short chain fatty acids that can boost fishes' natural gut micro-biome. It works as an anti-microbial agent and can be a key additive in KnipBio's premium alternative aquafeed, KnipBio Meal.

Larry Feinberg, CEO of KnipBio, stated, "In recent years the aquaculture industry has increasingly turned to lower-cost formulations that use less nutritionally-suitable ingredients such as soy protein to replace fishmeal. Numerous feed studies have demonstrated that fish given a diet with a high soy concentration take longer to grow and require more feed than fish given a low-soy diet. Additionally, a number of fish species are more susceptible to diseases like intestinal inflammations (enteritis) when fed a high-soy diet. These inflammations can adversely affect the immune system and disrupt the microbiome living in the fish's digestion tract. These imbalances can in turn provide a pathway for the introduction of harmful bacteria leading to diseases such as vibriosis and other related complications."

Feinberg continued, "As a leading developer of advanced feed ingredients for the aquaculture industry, we recognize one of the major challenges the industry faces is at the intersection between nutrition and disease. The Thai shrimp industry, for example, lost more than half its production in 2013 due to EMS. Just this past summer, EMS was detected for the first time in Australia and the United States. The industry sometimes responds by dramatically increasing the prophylactic use of antibiotics as a way to prevent potential infection. This is an expensive solution and, more importantly, has led to the rise of 'superbugs' resistant to antibiotics. A recent US study of imported shrimp looking for the presence of *Klebsiella* bacterium found forty percent of these bacteria were resistant to five or more antibiotics. KnipBio's goal is to promote a more responsible way to combat disease through healthier nutrition. Our work led us to the efforts of Professor Dr. Van De Wiele and Dr. Defoirdt of Ghent University, a research group that did much to pioneer the use of prebiotics as an immunostimulant in aquaculture and other animal feeds."

Ghent University has conducted research on the use of PHB as a disease control mechanism in finfish and crustaceans for more than 10 years. This research has shown PHB has a positive health effect across a wide range of commercially relevant species including tilapia, shrimp, sea bass, and sturgeon. PHB can reduce the potential for bacterial infections by boosting the population of beneficial bacteria in the fishes' gut. These beneficial bacteria crowd out harmful bacteria, making it much more difficult for infections to occur. Unlike probiotics, which introduce foreign bacteria into the fish, prebiotics work by promoting the growth of the fishes' natural gut bacteria. The result is a more natural microbiome and potentially healthier fish."

Professor Dr. Benedikt Sas, the Chief Business Officer for the University of Ghent's Center of Expertise Food2Know, "Our prebiotics research and technology have been more than a decade in the making. KnipBio is an excellent industrial partner for the valorization of this work. We are delighted to partner with KnipBio because they are in a strong position to advance single cell proteins and immunostimulants in aquaculture and related animal health fields."

Feinberg concluded, "We view the agreement with Ghent University as a win-win for both parties as well as the aquaculture industry. Ghent University has executed foundational research demonstrating PHB added to aquafeed improves feed conversion ratios, while reducing disease and mortality rates. KnipBio has developed single cell proteins that go beyond supplying a protein alternative to fishmeal by producing meaningful quantities of PHB and other nutritionally significant ingredients. The intersection between nutrition and health is known as immuno-nutrition and represents the future of aquafeeds. The opportunity to combine the benefits of high-quality protein while simultaneously providing resistance to diseases is a powerful outcome of the advanced biotechnology platform we are developing."

About KnipBio: [KnipBio, Inc.](https://www.knipbio.com) is a Massachusetts-based company pioneering advanced nutritional solutions for animal feeds using innovative biotechnology to develop a range of single cell protein products from non-food feedstocks. KnipBio is committed to maintaining a level of transparency to ensure the best sustainable and environmentally conscious practices. For more information, visit www.knipbio.com or contact us at info@knipbio.com

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