

# Next-gen solutions with milk oligosaccharides

Swiss biotech start-up **Gnubiotics**, which recently signed a production deal with Evonik, develops complex milk oligosaccharide formulations with the same characteristics as mammalian mothers' milk. CEO Jean-Philippe Kunz and CSO Yemi Adesokan explain what makes their products next-generation solutions for balanced growth, protection against infections, post-antibiotic recovery and immune development.

**P**lunged into the air and the world and the light, we cry, and we start negotiating. The wailing eventually stops, but our bodies just can't get enough of making deals. From the moment we're born, we're a market in ourselves, conning, cajoling and bartering with microbial envoys and denizens, to establish and maintain the exquisite balance of symbiosis. A lot of our success in doing so can be attributed to our mothers' milk, but with all the pressures and limits of modern living, which goes on ever longer, more and more of us are finding that early exposure is not enough to protect us from falling into dysbiosis later in life.

Human milk is loaded with over 200 different indigestible oligosaccharides. They help babies develop by nurturing the right balance of bacteria in their guts, which in turn helps the growing baby create energy and manage its immune system to fight off both inflammation and infection. For Yemi Adesokan, co-founder and CSO of Gnubiotics, as well as a pioneer in the field, "Milk oligosaccharides are the missing link between dysbiosis, the effects of which include an increased propensity for infections, and symbiosis."

The first three letters of Gnubiotics are an acronym for 'Gut Naturally Understood'. Unlike other probiotics and basic oligosaccharide producers, the Swiss company designs its nutritional ingredients specifically on the way the microbiome has been shown to work in the human body. As such, its ingredients for humans contain over 200 distinct oligosaccharides in a structure

modelled on that of human milk, and its AMOBiome product for pets and livestock, which is registered for sale in Europe and already being manufactured by Evonik, contains around 30. Adesokan calls it the "next generation" of biomodulation technology.

they have a healthy diet, they do sports, they don't take too much medicine and antibiotics, and they're not living in stressful conditions".

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## Jean-Philippe Kunz

"The microbiome is an inherently complex and diverse ecosystem, and really the only one in humans with a foreign genome," he explains. "Our approach is to understand how nature, over the years, has been able to modulate and control this organ, if you will, to enable an overall symbiotic situation. We follow nature in using a complex and diverse solution for a very complex and diverse target."

## All in the balance

The other side of the Gnubiotics insight is that nature needs help, both functionally and analogically. "One of the challenges is that modern diets don't bring the necessary nutrients to nurture your microbiota," adds Jean-Philippe Kunz, co-founder and CEO of Gnubiotics. "To give you a more business-driven example, it's a bit like capital – you receive capital at first, and you need to use it to grow."

Some people are able to maintain or even build on their seed funding, "because

depleted by antibiotics, we can't fold our bodies like a business and start again. We have to go on in dysbiosis, which means the balance of beneficial microbes shifts and certain types proliferate, shifting the gut microbiome into a pathogenic state and increasing the likelihood of unhealthy weight gain, as well as making us more vulnerable to infection.

As Kunz explains, the building-block strategy by which Gnubiotics is releasing ingredients for animals while it continues to test human equivalents allows each stage of development to function as a platform for the next. "We are in a position to offer solutions for different benefits," he says. "This can be a platform for protection throughout people's lives as well as a supplement for recovery taken in parallel with some drugs, and a way to reduce the use of antibiotics. The potential is tremendous." ●

## For further information

[www.gnubiotics.com](http://www.gnubiotics.com)