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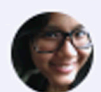
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SINGAPORE

STARTUPS

How the pandemic inspires Natural Trace to create a food supply chain traceability solution

What Natural Trace is offering is believed to be a better solution because, in addition to being food-grade, it is also tamper-proof



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18 Aug, 2022



The COVID-19 pandemic has encouraged many creative individuals to come up with solutions to tackle different challenges in our everyday life –including those that may not seem to have a direct correlation with the pandemic. Natural Trace, a Singapore-based biotech startup, is one of those companies that is providing an innovative solution inspired by a tool that is commonly used during the pandemic: the PCR testing system.

solutions to tackle different challenges in our everyday life –including those that may not seem to have a direct correlation with the pandemic. Natural Trace, a Singapore-based biotech startup, is one of those companies that is providing an innovative solution inspired by a tool that is commonly used during the pandemic: the PCR testing system.

The company is developing NaturalTag, which it describes as a world-first DNA-based food-grade tag to protect supply chain integrity. Simply put, this solution is in the form of powder or liquid that is added in minimal amounts to food products and ingredients. Businesses can later use the traces of these additions to track every ingredient in every product along each stage of the supply chain.

In the status quo, businesses use solutions such as blockchain, barcodes and serial numbers, as well as other external, non-food-grade tags, to track ingredients in the supply chain. What Natural Trace is offering is believed to be a better solution because, in addition to being food-grade, it is also tamper-proof.

“With a minimal quantity of NaturalTag microbial identifiers, each containing a natural and unique DNA sequence, the unique serial identifiers are captured into a traceability report, which generates origination information of each ingredient in a food product. Stored in Natural Trace’s cloud solution, companies and growers can retrieve the traceability report with fast turnaround times. This tamper-proof technology makes authenticating the origin of every single ingredient in a food product possible,” the company further explains.

By creating this solution, the Singapore-based startup aims to tackle the food safety, compliance, and integrity issues of the global food supply chain.

To understand better how the product functions, and the work that the team had done to create it, **e27** speaks to Natural Trace co-founder Dr Chantal Roth. In this article, we will also look at what is coming up for the biotech startup.

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Understanding where our food comes from

Natural Trace was founded by Switzerland-based Dr Roth and New York-based Prof. Lukas Muller, two scientists who specialise in genomics, and several angel investors at the height of the pandemic.

In our interview, Dr Roth explains how they came up with the idea for NaturalTag, starting with the problem that industries are facing when it comes to tracing food origins.

"There is a lot of ambiguity around the origin of raw foods. There is also quite a large percentage of counterfeiting going on. Apart from that, there is also the question about supply chain integrity, product integrity, and compliance ... and it is quite a large percentage of the supply chain that is affected. We are talking about the market size of approximately US\$3 billion," she explains. "As you can see, there are existing solutions that are well known. For instance, barcodes or holograms, but they are externals," she continues.

Dr Roth gives the example of vanilla exports from Madagascar to the US, an expensive product priced at about US\$500 per kilogram. The problem with existing solutions such as external tags is that they can easily tamper. "With an external label, you can swap the product with a cheaper product ... you can imagine that it makes a huge difference. Clearly, we need to be able to tag the product itself," she says.

In the market today, there are other solutions such as chemical markers, but they certainly came with their own problems. For example, many of them are not made of food-grade ingredients. "That is one of the big concerns that partners have voiced to us. They told us that they have looked at different products, but nothing is food grade, and that is our big advantage, because our product is completely natural," Dr Roth says.

Together, Dr Roth and Prof Muller have a combined experience of 40 years in the genomics industry, with a deep understanding of DNA sequencing and the advances in detection technology. Throughout the pandemic, they witnessed how testing tools are becoming more sensitive, affordable, and easy to use. It seems like the right momentum to try implementing the same concept, with all its advantages, for a different purpose.

The founders harvested the microbes that are being used in NaturalTag from food products such as yoghurt, milk, or cheese; once they are able to identify it, then they add a trace amount to the food product that they wish to track. After that, they use the existing PCR technology to detect the tag.

"We have both the short-term and long-term plans. As the technology evolves, we can also adapt our strategy, but in the short-term, we are using the PCR technology for the detection process as it is already well-established," Dr Roth says.

Also Read: [How digital technology can transform the food and beverage industry](#)

As a B2B solutions provider, Natural Trace works with agents worldwide who are reaching out to companies that are looking for a tamper-proof method of authenticating the origin of their products.

Moving towards the future

In June, Natural Trace announced the launch of its global headquarter in Singapore. In a press statement, the company dubbed Singapore a "natural choice" due to its food innovation and R&D ecosystem, which it saw as a conducive environment for a biotech startup.

It has also secured a partnership with the National University of Singapore (NUS) since September to conduct various experiments and testings for its food supply chain traceability solution. An example of food products that they are testing through the partnership includes red wine and how the solutions aged after a while. "We want to make sure that the tag is still detectable after, say, it sits on the shelf for six months," says Dr Roth.

Beyond the existing partnership, Natural Trace has many big plans for 2022. First and foremost, the company is looking for a professional CEO –a position that is currently held by Dr Roth. The new CEO will join a team that consists of six core members, plus another group that is working on marketing and legal.

Second, Natural Trace is currently fundraising for its latest funding round. After successfully raising seed funding to kickstart operations in Singapore, which counted angel investor CL Goh from Blue InCube Ventures as one of its backers, the company is raising US\$3 million in seed funding to support its expansion.

"A large percentage [of the funding] will go into production fixed costs. Another part will go into R&D; it is really important because we are in here for the long haul. So we want to make sure that we can develop our product for the next five to 10 years, make it better and better," Dr Roth says. "There are also packaging and distribution and some other business functions."

In terms of the characteristics of investors that they are looking for, Dr Roth says that they are looking for those with the same vision and ideology in building trust and increasing the traceability and transparency of the food we eat.

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