



# TurtleTree

## Cultivating Food Sustainably

Lin Fengru, co-founder of TurtleTree, speaks about her entrepreneurial journey in the biotech space.

**B**efore Lin became an entrepreneur, she was a recreational fromager. Her passion for making artisanal cheese led her on a pilgrimage to Vermont in the US, a famous cheese-making region, home to triple brie and extra sharp cheddar. This pursuit of the perfect wheel of cheese prompted her to find more sustainable food production methods. She subsequently founded TurtleTree, a company that uses cutting-edge stem cell technology to make healthier and more affordable dairy ingredients that are also kinder to animals and the environment.

TurtleTree focuses on creating functional components naturally found in milk and has plans to use them to fortify food products ranging from plant-based milk to yogurt. Since winning the Entrepreneurship World Cup and Liveability Challenge in 2020, TurtleTree has established offices in Singapore and the US.

### WHY DID YOU DECIDE TO START TURTLETREE?

I studied Information Systems Management in university, and after I graduated, I worked at Salesforce and Google, both tech companies. When I was working for Google, I was also learning how to make cheese as a hobby. I studied cheese-making for a couple of weeks in Vermont with the intention of replicating the process in Asia. I then went to Indonesia and Thailand to look for good sources of raw fresh milk. However, I could not accept the practice of contract farming in these countries, where cows were fed antibiotics and growth hormones to increase milk production. They were also susceptible to diseases when housed in crowded holding facilities. I realised that without a good supply of milk, the cheese quality would suffer and so gave up on pursuing my hobby.

About four years later, in 2018, I met my co-founder Max Rye at Google. While we were chatting about different technologies at a conference in Singapore, I found out from him about companies like Memphis Meats (now Upside Foods) and BlueNalu. They were groundbreaking companies producing plant-based meat and seafood. I started thinking about using similar methods to make milk, which nobody was doing back then. We pulled in some scientist friends and did a lot of our own research. In 2019, we started the company with six people.

We spent considerable time brainstorming how we should name our start-up and decided to go with 'TurtleTree'. Trees and turtles are symbols of longevity. Our logo looks like the cross section of a tree or a thumbprint, thus symbolising humans' imprint on nature. And its shape is inspired by the shell of a turtle. TurtleTree believes in preserving the longevity of the planet and its animals.

### WHAT HAVE BEEN SOME OF YOUR KEY LEARNINGS WHEN STARTING A BUSINESS?

Personally, the most difficult part for me was taking that first step to start TurtleTree. After that, there's just no turning back, and I don't think about it anymore. Every challenge thereafter is something that we work around, or we have a team discussion to see how we can tackle it.

My previous roles in tech have been in business development or sales. I have never had an issue speaking to new people and sharing the vision of my company. But at TurtleTree, I have become more receptive to working as a team. When we do our pitches, it is always a team event. Collectively, the team will write up the talking points and customise the presentation deck. Then we will rehearse

and share our feedback. We are fortunate that our current investors are also our mentors, so they share their thoughts on how we are performing or how we should adjust our pitch.

From the start, when we set up operations in Singapore, Max and I acted more like scouts to find new locations and ensure that the work environment is ideal. And we made sure we hired strong leaders who could drive the business independently. Our human resource business partner Fionna, for instance, is key to building a strong company culture. Using her vast experience, she built a strong support system to help our employees succeed. When people are happy at work, they will tell their peers about the positive environment. Almost half of our hires have been through referrals; we believe good people attract other good people. If you look at the statistics of companies like Google or Facebook, these tech companies have a large referral proportion of their cohort as well, usually about half. We are also constantly looking to expand. Currently, we are working off shared labs while we build our own facility in California.

One major challenge I faced was summarising the three-year history of the company as a three-minute elevator pitch. I learnt how to make it 'sticky' and also that you don't have to share everything, just the key points. The difficult part was to distil everything so concisely and precisely that even a 12-year-old would understand.

Early on, we faced many sceptical investors. They told us, "You guys are not scientists. What business do you have starting a biotech company?" We even had one investor who told us, "If you have a Nobel laureate on your team, then I will invest in you." Fast forward to today, we have made good progress. And this is because besides science, there are many areas the company needs to excel in. To build a strong business, we need to develop capable marketing, finance, and legal departments. Our strength is in our ability to attract the best scientists and lawyers to form the best team in the world. We have senior folks from firms like Novozymes, Merck, Thermo Fisher on the science side, and also fresh graduates from Singapore Management University and the University of California, Davis, which has one of the most comprehensive milk research teams in the world.

#### WHAT PRODUCTS IS TURTLETREE CURRENTLY WORKING ON?

We started by looking at whey and casein, which are nutritious proteins present in cow's milk. However, they are traded as commodities, priced at around US\$0.80 per kilogram. We

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do not want to go there because if we try to replicate it, the only advantage that we can get is being able to extract them more sustainably, but price pointwise, we wouldn't be able to match up to what the industry is offering. We wanted and needed to build something that was readily acceptable in terms of price for us and use case for the industry. So we decided we should look at functional nutrition using milk ingredients like lactoferrin, alpha lactalbumin, and complex sugars. Lactoferrin is a bioactive protein found in human milk with antiviral and antimicrobial effects; it helps with the gut-brain axis, promoting healthy bacteria in the gut, and stimulating the immune system. Alpha lactalbumin is another protein found in human milk that controls the production of lactose.

Our first product uses lactoferrin and a blend of 'better-for-you' ingredients; our business-to-business partners would include this special blend in their plant-based milk, regular milk, yogurt, and other different food products. Lactoferrin supplements are also being trialled as a treatment for COVID-19. It currently trades on the market from a few hundred dollars to US\$3,000 a kilogram because it is scarce. Globally, most of the lactoferrin supply goes into infant nutrition, but there are many opportunities around adult health and nutrition. We began to craft this blend after talking to our customers because it is important to create products that they want. Many start-ups make the mistake of first building a product and then finding customers for it.

#### WHAT ARE SOME OF YOUR PIVOTAL MOMENTS WHEN BUILDING TURTLETREE?

In 2020, we won the Liveability Challenge organised by Singapore's Temasek Foundation which promotes sustainability. Later that year, we also won the global Entrepreneurship World Cup competition. These events helped validate our business idea and our ability to compete in the global market. A food tech company triumphing over

other companies from different industries in these global competitions highlights the importance of food security. Solutions like ours can help countries that do not have a lot of land for agriculture, such as those in the Middle East. Besides, during the early days of the COVID-19 pandemic, the supermarket shelves were swept clean in many countries. Singapore obviously was very much affected, but so were many other nations. The crisis really helped us explain our aspiration and function more easily because people can connect with this story. It definitely helped us to spread our message.

#### WHAT DRIVES YOU TO BE SUCCESSFUL IN THIS BUSINESS?

We have an excellent team with the common goal of increasing food quality in a sustainable manner. One day, I hope to have TurtleTree's offerings used in most food products. We are not just talking about food ingredients. I think even for your day-to-day food products, a lot of engineering goes into putting this can of food or that pack of chips on your table. TurtleTree has the opportunity to contribute better engineering, ingredients, and raw materials; all these different things that promote sustainability and will be better for human health and animal welfare. I want this in most food products out there.



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#### WHO ARE SOME OF THE GREATEST INFLUENCES IN YOUR ENTREPRENEURSHIP JOURNEY?

My greatest influence is my mom. She always tells me, "It's not whether or not you can do it; it's whether or not you want it. If you want it badly enough, you can get it."

My former boss also provided good advice. Back when I was in Salesforce, she always told me, "Think about how that person you're sending the message to would receive it. It could be an investor, it could be a customer, it could be a boss, it could be a teammate." This really helped me to better scope out my responses and requests to people.

#### WHAT ADVICE DO YOU HAVE FOR YOUNG ENTREPRENEURS?

For a new entrepreneur, your network is going to be very important. In Singapore, for example, we have A\*STAR (the Agency for Science, Technology and Research), a national government agency that drives technology research and development to support research in areas that meet the country's needs. In the biotech space, the universities have many resources and will be able to connect entrepreneurs with scientists who conduct research in their area of interest, as well as principal investigators to help with grants.

I would advise entrepreneurs to talk to as many people as possible. I know it sounds simple, but it really helps. When we first started, I was new to the industry. I would reach out to people on LinkedIn, find out who the investors in this space are, who the potential customers are, and start bouncing ideas off them. I think most people are happy to share their thoughts if they feel they can make a difference or contribute something. In fact, I spend a couple of hours every Saturday talking to new business founders, just to bounce off ideas. This is always valuable for budding entrepreneurs. [AM](#)