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# **The APAC Alternative Protein Industry Report 2022**



Presented by

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# The APAC Alternative Protein Industry Report 2022

The Future is Asian

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PUBLISHED BY:

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## DESIGN:



**HOW  
ABOUT  
THAT!**

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# 1 Intro & Exec Summary

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## Publisher's Note

### Sonalie Figueiras

Are reports even relevant any more?

In the age of digital media and 24-hour news cycles, reports almost feel unnecessary. I've wondered if this exercise is self-indulgent and whether we are screaming into a void.

And yet. Over the past few months, I and the team have been working through all the industry news that has been reported in 2022 and, as I have sifted through countless headlines, interviews, launches, funding rounds, and more, I've come to the conclusion that reports are actually incredibly important.

The act of taking stock matters. It offers much-needed perspective and context.

**WITH RISING MIDDLE**  
**CLASSES IN THE**  
**HUNDREDS OF MILLIONS,**  
**THERE'S NO DOUBT IN**  
**MY MIND THAT THE**  
**ASIA FOOD STORY IS THE**  
**MOST IMPORTANT ONE**  
**TO TELL.**

When you are overwhelmed with the latest industry announcements on a daily basis, you often miss the forest from the trees. It's only in the last couple of weeks, editing and reviewing the report draft and seeing everything together that I can appreciate just how much progress our passionate and growing alternative protein community has made across the region. This past year we have celebrated global firsts (the first cultivated fish ball! The first cultivated duck breast!), world record-breaking funding rounds (TiNDLE and Vow's Series As), the President of the planet's most populous country calling out alt protein as a key part of national food security. It's starting to feel very hopeful.



At Green Queen, we have always strived to tell a global story through an Asian lens. Over 60% of the world's population lives in Asia, yet the region only has 20% of the world's agricultural land. Alternative protein is an important part of the future food toolbox if we are to build a stronger, more resilient regional food system that will face water shortages, land degradation, and more frequent climate-related weather events, amongst many other challenges.

It's no surprise to me that Asian governments, including Singapore, China, South Korea and Japan, are committing funds, resources and regulatory oversight to our growing sector. They are acutely aware that protein production is a national security issue, particularly when a new geopolitical order has resulted in a shrinking globalisation agenda.

With rising middle classes in the hundreds of millions, who will need an ever-increasing amount of accessible, affordable and sustainable food, there's no doubt in my mind that the Asia food story is the most important one to tell.

When I look at the APAC alt protein industry's 2022 achievements, I am overcome with excitement for what's to come and a sense of certainty that we can redesign our food systems to be safer, fairer, more ethical and more nutritious, not to mention adapted to the realities of climate change. The future of food is Asian!

## Acknowledgement

Green Queen Media would like to thank everyone who contributed to the report at different stages and in various ways. Their sharing and expertise contributed to the breadth and depth of this report, and their insights into Asia Pacific's alternative protein market are invaluable. For a full list of contributors, kindly refer to the report's Appendix. We would also like to express our deep gratitude to our many sponsors, who generously supported the creation of this report, without which it would not have been possible to maintain the report quality and continue to offer it as a free resource to help inform the industry, educate consumers, inspire aspiring founders and advance the sector's wider research and development efforts.



## Report Methodology

This report is authored by Nicola Spalding, edited by Sonalie Figueiras, designed by HAT Design and published by Green Queen Media, the Hong Kong-based global independent impact media platform whose online magazine Green Queen offers original news reporting on a wide range of sustainability and global health topics with an Asia-Pacific lens, with a focus on documenting the growing alternative protein industry.

The analysis in the report draws on both primary and secondary data collected by the Green Queen Media team including lead researcher Nicola Spalding, who conducted one-on-one interviews and extensive discussions with stakeholders, industry

experts, entrepreneurs, investors, connectors, and accelerators. Special thanks to Alessandra Franco, whose tireless efforts with our sponsors have resulted in a report that, we hope, you will find even more inspiring than our last.

Further, this report draws from a range of sources such as prior reports on alternative proteins, research from organisations like the Good Food Institute (GFI), U.N. Food & Agriculture Organization (FAO), and additional original reporting from Green Queen Media.

Finally, all interviews featured in this report have been edited for clarity and consistency.

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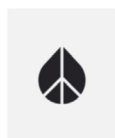
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## Author's Note

### Nicola Spalding



Asia Pacific's Alternative Protein industry has evolved dramatically since our last report. We have done our best to make the report as up to date as possible, but we underline that this report is reflective of the industry as of November 30, 2022.

As per our last report, our geographic focus also includes Australia and New Zealand, as vital components in the APAC alternative protein industry. Regarding the alternative protein players that make up the subject matter of this report: our focus is on companies, both startups and majors, that are highly innovative, are pioneering disruptive technology and whose model is highly scalable, commercially viable in the medium term and whose mission is to fundamentally change existing global food systems. Note: This report does not cover insect protein as it is not a slaughter-free choice.

## Executive Summary

In the year since our last report, the global economic landscape has changed dramatically. In turn, global food security has been drastically affected, and the food tech industry is adapting in response.

The ongoing conflict in Ukraine has been a major factor in the current state of the world's economy and food supply chain. Our food systems are dependent on globally-integrated systems which, when interrupted, fall into chaos. Ukraine's biggest food exports are seed oils, corn, and wheat, all staples of modern food production, and restrictions on which have led to soaring prices elsewhere as demand massively outpaced supply. Sanctions on Russian oil and gas have caused energy prices to spike, resulting in higher fuel costs and food prices as the cost of food production and transport rose to unforeseen levels.

Global inflation may have been relatively moderate before the pandemic, but surging prices since late 2020 have pushed inflation steadily higher. The average global cost of living has risen more since the start of 2021 than it did during the preceding five years combined.



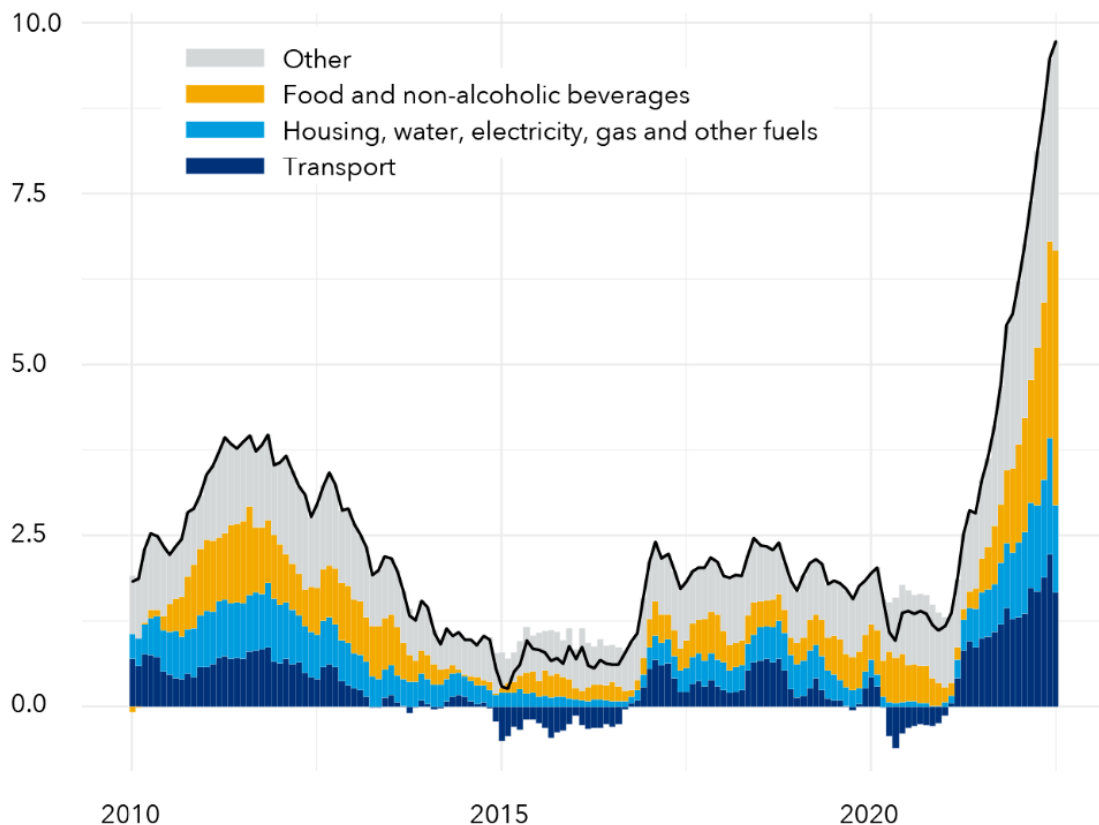
As uncertainty swept the world, startup funding slowed across the entire food tech sector. In fact, most industry sectors were hit, seeing fewer unicorns and exits, and more frequent reports of cuts and dissolutions.

**DESPITE THE FACT THAT ASIA IS THE LARGEST CONTINENT, AND SO ONE OF THE MOST AFFECTED BY CLIMATE CHANGE, IT'S ONE OF THE MORE DIFFICULT PLACES TO GET FUNDING AND SUPPORT FOR THE TECHNOLOGY THAT COULD HELP TO BATTLE THE CLIMATE CRISIS.**

The effects of climate change have become ever more obvious through 2022, as heat waves swept across parts of the globe through the summer. Floods devastated Pakistan and displaced its population, while a “megadrought” in California threatened irrigation and water supplies, and news of “inevitable” sea level rises due to melting ice caps became a weekly occurrence. Despite the fact that Asia is the largest continent, and so one of the most affected by climate change, it's one of the more difficult places to get funding and support for the technology that could help to battle the climate crisis. In spite of this, Asia-Pacific startups continue to make waves in the alternative protein industry, in fact 2022 has seen some of the biggest funding rounds and technology breakthroughs to date, but it feels like there is a separation in the pack. Certain countries are pulling ahead as clear market leaders, putting regulatory frameworks and government support behind the alternative protein sector, while others are slower to act. Some startups are achieving world firsts, innovating in the most impactful ways to save our food systems, while others are lagging

## Inflation drivers

Food and energy prices continue to drive the global inflation surge.  
(percent, median inflation rate)



Source: IMF CPI database and IMF staff calculations.  
Note: Chart shows median total inflation and in select categories across 88 countries, including 28 advanced economies and 60 emerging and developing economies.

IMF

behind and failing to inspire venture capitalists, or consumers, with yet another plant-based burger.

This recalibration, or realignment of efforts, may not be a bad thing. Alternative protein has certainly seen a boom, but it doesn't mean that it must now go bust. What is clear is that there perhaps have been too many startups, not enough focus, not enough shelf space, that funding hasn't necessarily always gone to the 'right' places, and certainly not to the media and supporting ecosystem that is so needed to make a difference to the industry and to help shift consumer attitudes and behaviour away from animal-based protein and towards a more sustainable future.

To date, government support for, and regulation of, alternative proteins has failed to keep pace with

technology development but, hopefully, the tide will soon turn. Several governments are making regulatory strides and investing in alternative proteins to meet national policy goals, bolster food security, mitigate climate impact, and strengthen their economies. If governments can instill the proper regulatory frameworks for the industry, Asia Pacific could well become a world leader in alternative proteins.

This report highlights the wins in the industry, and investigates these theories, providing invaluable insight from some of the sector's biggest hitters. APAC's alternative protein acceleration may appear to have slowed, but in fact is undergoing a necessary refocus towards a brighter future.

# APAC ALT PROTEIN INDUSTRY: KEY NEWS TIMELINE 2022

## January

**China:** Starfield confirms \$100 million Series B investment round, the largest alt protein round for China

**China:** 5-Year Agricultural Plan includes cultivated meat and future foods for the first time

## February

**Singapore:** Next Gen Foods' TiNDLE raises largest-ever plant-based meat \$100M Series A

**APAC:** Better Bite Ventures announces APAC's first dedicated alt protein VC fund

**Australia:** Australian Plant Proteins debuts project to transform South Australia into a global hub for plant protein production.

## March

**APAC:** APAC Society for Cellular Agriculture launches to unite the region's cultivated industry

**China:** President Xi Jinping references alternative protein in a speech about domestic food security for the first time

**South Korea:** Biotech giant CJ CheilJedang announces partnership with cell culture media startup KCell Biosciences

## June

**Singapore:** Eat Just's GOOD Meat breaks ground on the largest cultivated meat factory in Asia

## July

**Singapore/Vietnam:** Shiok Meats signs MOU with Minh Phu Seafood to co-develop cultivated seafood

## August

**China:** First Asian precision fermentation company, Changing Biotech, comes out of stealth with \$22M Series A

**South Korea:** Seoul's National Plan to include official guidance for alternative proteins for the first time

**Singapore:** ADB & Asia Sustainable Foods Platform form ScaleUp Bio JV, partnering with A\*STAR to establish a precision fermentation lab

## October

**APAC:** APAC Society for Cellular Agriculture agrees on "cultivated" as the industry term for cellular agriculture

**Australia:** Vow unveils NSW-based Factory 1, capable of producing 30 tons of cultivated meat per year

**Singapore:** Dutch cultivated pork company Meatable and Dutch cultivated meat pioneer Mosa Meat sign exclusive partnership agreements with contract manufacturer ESCO Aster

## November

**Singapore:** Love Handle announces a collaboration with Meatable to bring hybrid products to Singapore

**Australia:** Vow breaks records with largest-ever cultivated meat Series A

**Singapore:** Perfect Day debuts Asia's first animal-free dairy milk brand Very Dairy

**Singapore:** Shandi Global opened what it says is Singapore's "largest" plant-based chicken manufacturing facility

**India:** Phyx44, India's first full-stack precision fermentation dairy company, debuts with \$1.2M seed



# CASE STUDY: TiNDLE

## THE UNSTOPPABLE FORCE

Made with chefs, for chefs, TiNDLE is the award-winning plant-based chicken sensation that has gone from 0-100 mph in under two years. TiNDLE's signature and distinct blue branding is making its way around the globe, as its Singapore-headquartered parent company, Next Gen Foods, partners with chefs at well-known restaurants to inspire consumers with plant-based versions of their favourite dishes.

At the time of writing our last report, TiNDLE was only available in 150 restaurants in Asia. Shortly after, the brand landed in the UAE, swiftly followed by the Netherlands. 2022 brought a record-breaking \$100 million Series A raise, the largest single Series A investment in the plant-based meat sector to date, followed by successful launches in the United States, United Kingdom, and Germany, which included

landing a national foodservice distribution deal in the United States. Andre Menezes, TiNDLE's Co-Founder and CEO, told us in our last report that he and his team had always intended for TiNDLE to be "global from the get-go," and the brand's strategy is definitely working. So how do they do it? TiNDLE feels like an unstoppable force, one to be reckoned with, so what's their secret?

As Menezes says, "TiNDLE is lucky to be backed and supported by long-term and mission-aligned institutional investors, and our highly experienced leadership team, which includes second-time founders in the plant-based meat industry, is a key driver behind our success, along with our highly scalable business model, our exceptional consumer branding and our cutting-edge product technology."



*TiNDLE Katsu Burger*



*Timo Recker, Co-Founder & Executive Chairman, and Andre Menezes, Co-Founder & CEO, Next Gen Foods*

TiNDLE is building a team with the experience and competencies to lead and inspire, to shape its company culture. Its secret to attracting the best talent is simple: the company was built with the mission to make saving the planet easy, enjoyable and delicious, and it has been able to hire mission-aligned team members around the globe.

In September 2021, Rachel Konrad joined TiNDLE as its first independent board member. Ex-Impossible Foods and Tesla, Konrad's experience within highly disruptive and iconic companies has provided connections to leaders and investors in the plant-based space, which have also resulted in key hires for the brand. Other notable board members include Jenny Lee, Managing Partner at GGV Capital, who the brand describe as "a trailblazer in not only the food and food tech worlds, but also across industries that prioritise tech and innovation," and Mathys Boeren, CEO of Nurasa at Temasek Holdings. The appointment of an experienced and supportive board only serves to strengthen and add credibility to TiNDLE's status as a global leader in plant-based foods.



**TiNDLE is lucky to be backed and supported by long-term and mission-aligned institutional investors.**

*Andre Menezes, Co-Founder & CEO, Next Gen Foods*



*TiNDLE Tsukune*

## Positivity in the face of adversity

Globally, our food supply chain is facing mounting pressure. While some companies struggle, TiNDLE is positive about the future and considers current events a major opportunity to shift consumers towards sustainability, as Menezes explains: “We are facing a global food crisis, and not for the first time. We foresee the demand for meat continuing to grow over the next few years with animal farming being unable to meet this rising demand. Plant-based products do not face the same obstacles as animal agriculture, such as sourcing feed and supplies for livestock and being limited by the animal itself. By educating consumers on the benefits of plant-based

meats and their impact on the environment, plant-based meats will be well-positioned as a long-term sustainable solution to the global food crisis.”

Plus, as with many other businesses, the pressures of an inflationary market pose a challenge. TiNDLE’s view, however, is that, when compared to the animal meat industry, inflation has a less detrimental impact on the plant-based meat industry, given the immense use of resources needed to produce animal meat today. Menezes continues: “So far we have not had to raise our prices and, in fact, as we continue to grow, we will look to reduce the price of TiNDLE as



**The current challenges we're seeing today, including rising inflation, will only force the plant-based industry to emerge stronger on the other side - with greater innovation and efficiency to meet consumers where they are.**

*Andre Menezes, Co-Founder & CEO,  
Next Gen Foods*

we start to benefit from economies of scale. This will allow for a broader consumption of our product and result in a larger positive impact on our planet." Some brands may be concerned about losing consumers to cheaper foods, especially animal products which receive government subsidies that make them more affordable than plant-based alternatives, despite their inherent unsustainability. But, as Menezes notes: "The current challenges we're seeing today, including rising inflation, will only force the plant-based industry to emerge stronger on the other side - with greater innovation and efficiency to meet consumers where they are."

TiNDLE feels that the path to sustainability is a long one, though absolutely inevitable, likening the movement to the evolution away from transportation that relied on animals - a horse and cart - requiring innovation that allowed us to remove the animal,

while still being able to achieve our destination. It seems obvious, then, that we can expect to see a similar trend in the food industry, and we will eventually no longer need to use animals to produce foods we know and love today. "Our food system today is highly inefficient. We are growing and slaughtering 80 billion lives a year just to obtain a delicious ingredient consisting, basically, of water, protein, and fats. In the future, we predict all ingredients will come directly from plants, using more efficient technologies and resources. We believe there will be an inflection point towards this future in the coming years once consumer education has increased, the aspirational value of meat falls, and the subsidies provided to animal farming are reduced."

## Now and next for TiNDLE

The brand recently launched pre-breaded TiNDLE nuggets and patties for foodservice customers, and plans to launch TiNDLE tenders later this year. These were developed through an open innovation process, using feedback from hundreds of chefs and consumers around the globe, highlighting the brand's intention to respond to exactly what the market wants. TiNDLE's R&D team used 3D scanning and printing technology to design the moulds for its pre-breaded products, to ensure that their surface appearance accurately matches that which consumers would expect from chicken from birds, which has curves and grooves and is not a perfect, uniform flat shape. In fact, the technology means that TiNDLE can create any shapes it likes, and is not limited to the shapes of chicken breasts or tenders.

Europe and the US now account for 80% of TiNDLE's sales, and its restaurant count in Asia has grown by almost four-fold over the last year. Following this success, TiNDLE's next planned move will be into retail in 2023. Having started its journey with chefs, for chefs, the brand's retail products will bring the same DNA: a restaurant quality plant-based product that combines the flavour, shape and texture of chicken that can be incorporated by home cooks into delicious recipes. Where they will differ slightly, however, is that while chefs want a product that is versatile and allows them to create and experiment, most consumers are looking for products that are both convenient and delicious, requiring less





*TiNDLE Butter Chicken*

preparation while still being flavourful and of the highest quality. The brand's ultimate aim is to sell TiNDLE everywhere that chicken from birds is available, starting with retail partners who can help to build the TiNDLE brand and embark on the mission to get meat-eaters to try and adopt plant-based food as part of their diet.

Next Gen has hinted at the development of further proteins. The startup chose chicken as its first protein to emulate sustainably because it is the most widely-consumed animal protein on the planet, but also due to its sheer versatility, something reflected by the myriad of dishes chefs have created through its international rollout. So what will be next? We can't wait to find out.

Europe and the US now account for 80% of TiNDLE's sales, and its restaurant count in Asia has grown by almost four-fold over the last year

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An abstract graphic design featuring a light beige background. In the top left, a blue circle contains the text 'Presented by TINDLE™'. Below it is a smaller purple circle. A large purple circle and a red circle with a white center are positioned in the upper right. A thick blue diagonal band runs from the middle right towards the bottom right, with a red rounded rectangle overlapping it. The number '2' is prominently displayed in the lower left.

**2**

# Top 10 Big Hitters

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# APAC companies break through the \$100 MILLION mark for the first time

Globally, food tech funding may have slowed year-on-year but, in Asia Pacific, many companies are making progress, and some are hitting unprecedented funding milestones. Two in particular, Next Gen Foods and Starfield, raised \$100 million rounds this year, breaking records and paving the way for others to follow and, in late November, Vow announced a record-breaking \$49.2 million Series A, the largest for cultivated meat globally.

Big wins in other regions have helped to spur on the industry here, though, and helped to shake up investors. The international landscape is changing in the wake of the pandemic, and thanks to food insecurity and supply chain issues caused by the ongoing conflict in Ukraine, meaning that consumers and investors alike are waking up to the opportunity - and necessity - of alternative protein.

Asia Pacific is home to more than half of the world's population: 4.3 billion people. In line with population growth, protein consumption in the region is also growing. Certain parts of Asia have long been home to meat-intensive diets, but the last few decades have seen both production and consumption increase dramatically at a faster rate than the rest of the world, largely due to changing demographics. Data from Statista in July 2022 shows that the meat sector's revenue amounts to \$346.80 billion in 2022, and this is expected to see an annual CAGR of 10.77% to 2027. In order to sustain this growth in demand whilst counteracting the associated climate catastrophe, suitable alternatives to animal protein must be found.

In addition, the growing influence of Gen Z consumers, who seem to have similar attitudes no matter where in the world they are from (often dubbed 'the flat generation'), is a major factor in the shift towards a more sustainable future in Asia Pacific. In fact, by 2025, Gen Z will make up a quarter of the region's population. Research conducted by consumer insights firm Veylinx in May 2022 shows

that Gen Z are the most-interested demographic for alternative meat products. By 2030, half of all transactions in the world will take place in Asia, so Gen Z in the region will hold major economic power, both locally and globally, to drive change.





## Next Gen funding its world domination

Singapore's Next Gen Foods is the company behind vegan chicken sensation TiNDLE. Its \$100 million Series A round in February 2022 marked the largest single round of its type in the sector to date. At the time, Next Gen had its sights set on expansion into the US. Since then, it has successfully launched into the UK and Germany, alongside securing its first national US distribution deal with restaurant chain Veggie Grill.

Next Gen is also using the funds for a range of development projects, such as the completion of a research hub in Singapore, underway with help from the Food Tech Innovation Center. The startup's impressive pace of rollout, and its own style of brand engagement, are testament to the fact that its signature TiNDLE plant-based chicken is winning with both investors and consumers.

## Starfield on track to become biggest plant-based brand in China

Chinese plant-based meat company Starfield Food Science & Technology made history in January 2022 with its \$100 million Series B investment round, the country's largest-ever for an alternative protein brand. Starfield produces self-branded products that are sold commercially through third-party retailers, at 14,000 outlets across China, in a B2B2C model.

The company is using the funding to significantly increase its production capacity through construction of a large-scale manufacturing plant, and to improve its R&D capabilities. The new facility will be equipped to produce "hundreds" of vegan meat variations, including chunks, mince, and whole-cuts, and will help with reducing costs across the board.



## Record-breaking rounds: paving the way for the industry

TiNDLE's co-founder and CEO, Andre Menezes, confirmed that the "majority" of the startup's Series A was raised with "capital from the Western hemisphere", whereas Starfield's round was led by Beijing's Primavera Capital Group, perhaps because its products are more closely aligned to Asian cuisines and consumer preferences.

Both companies are an inspiration to other startups in the space, and prove that APAC's alternative protein industry is a global force to be reckoned with.

Breaking through the \$100 million frontier is a big deal for the sector in APAC since, historically, most alt protein VC dollars go to US and EU companies - one of the reasons that microalgae pioneer Sophie's Bionutrients moved a chunk of its operations to the Netherlands this year.

These rounds are a signal for the future: Asia Pacific will be a breeding ground for some of the largest alternative protein companies in the world.



# Asian governments put alt protein on the menu

Safeguarding China's food security has long been a high priority for the Chinese central government. Until recently, its policies and plans relating to food security have mainly stressed the importance of domestic production and diversification of food imports, and less attention was paid to the potential of alternative protein as a sustainable source of food for a growing population. President Biden's recent biotech announcement, in which he detailed plans to cut dependence on foreign manufacturers, dealt a major blow to Chinese producers and the country's stock market, proving that reliance on export would no longer be a sustainable long-term plan amidst increasingly tense China-US geopolitical relations.

## Asian government attitudes evolve

In January 2022, China's Ministry of Agriculture and Rural Affairs published its national plan, which acts as a blueprint for future developments, innovations and national economic strength. For the first time, the plan specifically included cultivated meat and 'future foods' as sectors in which to actively participate. And, in March of this year, China's President Xi Jinping referenced alternative proteins in a speech during which he underlined his support for domestic food innovation, marking an historic first, and a major headline across the world.

China is not alone in making major strides towards the promotion of alt protein within its domestic industry. In November 2021, the Japanese government made moves to establish the country's first labelling rules for plant-based foods, with government minister Taro Kono describing the lack of guidelines as a "shackle" for the industry's development. In June 2022, the same government announced its plans to pull together a team of experts to analyse the safety



of cultivated meat, which many experts saw as a precursor to implementing a regulatory framework for future commercial product approvals. This is especially important in a country where an underlying preoccupation with meat safety could provide a stumbling block to cultivated meat acceptance, but where, as a nation, a lot of faith is placed in relevant governing bodies.

South Korea's National Plan includes official guidance for alternative proteins for the first time ever this year, including an outline of a system to evaluate the safety and manufacturing processes of cultivated meat, indicating that regulatory approval is perhaps not too far away.



In Singapore, the government has proved its intentions to make the city-state a leader in the alternative protein space. Singapore remains the only place in the world where the commercial sale of cell-based meat is permitted, and its government-owned Temasek Holdings is behind some of the biggest and most important investments in the sector. Startups and big businesses alike flock to Singapore thanks to its establishment as an alt protein hub, ripe with the best talent and home to some of the region's most successful companies in the industry to date.

## Why government support is fundamental to the future of alt protein

To date, growth in the Asian alternative protein industry has largely been supported by private investment. If we are to see a truly widespread adoption of alternative proteins, and a shift away from animal-based agriculture, the industry requires large-scale infrastructure and talent, something which can only be incentivised by governments. Plus, without governmental regulation and support, there could be issues surrounding food safety and sustainability concerns for consumers, or a future in which the animal-free industry is dominated by the same major players as in the conventional protein industry, reducing competition and strangling intellectual property. But, if the proper regulatory frameworks are put into place, Asia could well be the biggest market for, and a world leader in, alternative proteins.



# China's first precision fermentation startup comes out of stealth

In August of this year, China's first precision dairy startup, Changing Biotech, came out of stealth to announce a record-breaking \$22 million Series A funding round, the largest for the country's alternative protein industry after Starfield's \$100 million Series B in January. Changing Biotech's single-cell milk protein, which is made from a fungi strain that is classified as an edible microorganism in China, can be used for all sorts of applications, and the startup will be applying for FDA approval this year.

## China's dairy consumption is on the rise

Thanks to rising incomes, accelerated urbanisation and campaigning by industry associations, per capita consumption of milk in China is increasing steadily. The nation of nearly 1.4 billion people is now the world's second-largest consumer of dairy products. According to data from researchers at the Ministry of Agriculture and Rural Affairs, per capita consumption of dairy rose 11.8% year-on-year to 42.3kg in 2021. One reason behind such important growth may be that a great deal of the dairy consumed in China is eaten as yoghurt. The people of Asia Pacific, as a region, are known for their lactose intolerance, but the fermentation process for the production of yoghurt breaks that lactose down, making it easier to digest. Plus, the influx of brands from the West with youth appeal, such as Pizza Hut, which uses dairy cheese on its pizzas, means that a significant part of the growth in dairy is down to younger generations. Satisfying this growth has seen a drastic rise in imports, but domestic dairy production is also on the up, with the output of China's largest dairy producers climbing 0.9% year-on-year to 12.43 million tonnes in January-May of this year, and annual output expected to reach nearly 54 million tons by 2031.

Solutions are needed to meet this growing demand, but sustainability is key if we are to continue to exist on planet Earth. Precision fermentation could be the answer, since it allows for the development of molecularly-identical dairy proteins, or a zero-compromise alternative to animal-based dairy. As new data shows that taste is one of the major factors putting consumers off plant-based alternatives, precision fermentation dairy could potentially create a viable sustainable alternative which doesn't put consumers off, since its taste, along with the rest of its properties, are bio-identical to animal dairy products.



### Chinese milk-equivalent imports rise (12 month rolling total, '000 MT)



Source: GTT, StoneX Calculations

Changing Biotech's funding round, one of the top ten in Asia Pacific in the past year, shows clear appetite from VCs for precision fermentation technology within the region. And, alongside venture capital, there is also ecosystem support for the tech. Doris Lee, CEO of GFI Consultancy, a Shanghai-based strategic partner of non-profit think tank Good Food Institute APAC, commented at the time of the news that "few countries are as well-positioned to scale up fermentation technologies as China, which can leverage its vast range of untapped

biological resources, top-tier research institutes, and unparalleled manufacturing infrastructure to do for the nascent alternative protein space what the nation is already doing for clean energy and electric vehicles."

In a *New York Times* piece on the subject, leading environmentalist George Monbiot called precision fermentation "the most important environmental technology humanity has ever developed." He may be right.

# The rise and rise of India's plant-based food industry

India's massive population and religious culture rooted in vegetarianism, alongside a growing awareness of the importance of health and food security, make alternative proteins a natural fit to build the country's sustainable future. A study by Kerry, released in December 2021, revealed that India is a high-growth location for plant-based nutrition, with poll results demonstrating a generally open mind to plant-based options, plus a willingness to buy them regularly. The study highlighted that 41% of people already eat a minimum of six types of plant protein, with a willingness to add more, including plant-based meats. There isn't currently a regulatory framework in place for alternative proteins in India

but, in July 2022, India's Food Safety and Standards Authority said it is moving to further clarify the definition of vegan food in order to curb the sales of fake vegan products.

The Good Food Institute India refers to the "smart protein" sector. This rebrand is important since the future of protein is not an alternative, but a smarter choice. Per GFI India's data, there are already more than 50 startups now active in the space, with an ecosystem of 80+ companies supporting their growth towards what it predicts is a strong, and valuable, future. This year has seen India's smart protein brands make their mark on the industry in APAC and, we hope, this is just the beginning.

**DOMESTIC MARKET SIZE BY 2030 (IN INR CR)**

| SCENARIO                   | PLANT-BASED MEAT | PLANT-BASED DAIRY | PLANT-BASED EGGS | FERMENTATION DERIVED MEAT | OVERALL |
|----------------------------|------------------|-------------------|------------------|---------------------------|---------|
| CURRENT MARKET SIZE (2022) | 100              | 250               | 1                | -                         | 351     |
| LOW GROWTH                 | 1,803            | 4,827             | 527              | 318                       | 7,475   |
| MEDIUM GROWTH              | 3,525            | 7,643             | 989              | 622                       | 12,779  |
| HIGH GROWTH                | 5,884            | 10,625            | 1,416            | 1,038                     | 18,963  |

**EXPORT POTENTIAL BY 2030 (IN INR CR)**

| SCENARIO      | PLANT-BASED MEAT | PLANT-BASED DAIRY | PLANT-BASED EGGS | FERMENTATION DERIVED MEAT | CULTIVATED MEAT* | OVERALL |
|---------------|------------------|-------------------|------------------|---------------------------|------------------|---------|
| LOW GROWTH    | 2,194            | 459               | 266              | 351                       | 1,312            | 4,582   |
| MEDIUM GROWTH | 4,722            | 1,208             | 432              | 604                       | 2,415            | 9,381   |
| HIGH GROWTH   | 6,824            | 1,889             | 631              | 819                       | 4,158            | 14,321  |

\*Includes exports of growth factors and recombinant proteins

## A domestic funding frenzy

In February 2022, Mumbai startup Blue Tribe Foods, one of India's leading plant-based meat manufacturers, welcomed Bollywood celebrity Anushka Sharma and her husband, cricket star Virat Kohli, on board as investors and brand ambassadors, drawing global attention to the country's alternative protein industry. Bollywood is a "huge part of the average consumer's life" in India. For many Indians, Bollywood films, and their stars, are hugely influential in their consumer decisions. So, the fact that Anushka Sharma, alongside Riteish and Genelia Deshmukh, founders of plant-based meat brand Imagine Meats, are promoting a more sustainable lifestyle could help to influence consumer behaviour towards the sector.

Bengaluru-based Alt Co., which produces alternative dairy products, confirmed a \$1 million raise led by undisclosed major investors from Singapore, the Middle East and India in June 2022. Plant-based meat brand Shaka Harry, which designs its products around the Indian palate and says it's one of the fastest-growing vegan meat and snacks brands in South Asia, raised \$2 million seed funding in July 2022. Greenest, known for its affordable plant-based meat products and partnerships with food service leaders in India, secured an undisclosed pre-seed funding round led by Better Bite Ventures in August 2022, having debuted a new range a few months prior.

## Collaborations with Big Food accelerate penetration

One of the fastest ways to get a brand in front of consumers is to work with an already-established business that consumers know and love. In January 2022, Indian delivery giant Swiggy, the largest ordering and delivery platform in the country, announced a partnership with GoodDot to make animal-free foods easier to source. In April of this year, BVeg Foods confirmed a strategic partnership

with Swiss machinery leader Bühler, allowing it to become one of the country's first large plants to offer high moisture extrusion technology.

And, in June 2022, Starbucks India announced it was partnering with Imagine Meats on a range of vegan menu items to be served at its stores across ten major locations. Varun Deshpande, Managing Director of the Good Food Institute India, described the partnership as "hugely exciting and significant", because the Starbucks brand and experience gives early-adopter Indians an "opportunity to try delectable [plant-based] dishes in localised and international formats". He also commented that it marks "the first major Indian launch which elevates both brands, rather than 'white-labelling' - a visionary move that fits in with best practices to build category awareness and desirability"







## Homegrown brands target international expansion

ITC, one of India's largest conglomerates, announced its plans to enter the plant-based meat sector in January 2022, a move which is likely to impact the export market positively. Plus, Tata Consumer Products, a \$9 billion CPG giant, began selling its 'TATA Simply Better' plant-based meat line nationwide through its Amazon Prime store in July this year. At the time, Deshpande commented that this mass market launch was "huge", because TCPL's existing network already "reaches over 200 million households and knows how to get food to Indians' plates." He continued: "The Tata group is synonymous with consumer trust and India's

multicultural heritage, and is highly diversified - which means potential investments to localise supply chain, improve products further, and drop cost basis, all benefiting the Indian economy and farmers, increasing access, and pushing the sector forward globally."

Some homegrown brands, such as GoodDot and Greenest, already enjoy international market presence, with the latter presenting its kebabs, samosas and keema to great acclaim abroad. Others are known internationally thanks to their incredible innovation, such as plant-based egg pioneer Evo Foods. Domestic production and food security may be India's main focus, for now, but expansion into other markets could bring some much-needed cash to the sector.



# Oatly's Asia growth: a localisation success story

Asia is Swedish oat milk giant Oatly's fastest-growing region, seeing +66% year-on-year revenue growth to \$42.7 million and +55% year-on-year volume growth in Q2 of 2022. 94% of its revenue comes from mainland China, Hong Kong, and Taiwan, and 82% from just one SKU: Barista Edition, known as Coffee Master in China. The product has seen significant success in the US, and in Asia it's no different. Given that around 90% of Asian people are lactose-intolerant, it's no surprise that a credible oat milk alternative is an attractive option.

Part of the brand's success in Asia has been its early market entry and bringing factories to the region to compete on cost and speed distribution. Now, Oatly is targeting the region for continued acceleration.

## Asia: a major plant-based milk opportunity

Oatly opened three new global production facilities in 2021. Two are in Asia - in Ma'an Shan, China, and Singapore - and are expected to increase their production capacity through 2023. Oatly CEO Toni Petersson said at the time of opening the plants that the growth in production facilities in Asia is part of the company's broader mission to "be a leader in the shift to a more plant-based future" and bring its factories "closer to our consumers", since Asia is such an important market for the company. He continued: "As we expand and scale our more localised production footprint while remaining disciplined in our capital allocation, we are confident in our ability to achieve much better production economics and operating efficiencies, reduce our environmental impact, and achieve profitability".

## Tea Master: adapting to the mainland Chinese market



In 2022, Oatly is capitalising on Asia's love for tea with its Tea Master line, designed specifically for tea shops in China. "We estimate that the market size of boutique tea is twice that of boutique coffee," Petersson said earlier this year. Oatly's Tea Master edition is now at more than 13,000 outlets and counting, proving that products tailored to consumer tastes in a region as massive as Asia will likely guarantee success. This localised approach to product development, rather than simply launching a one-size-fits-all offer, is key for Western brands trying to break into the region. Every expert we spoke to while writing this report flagged the importance of products that are adapted to Asian tastes, cultures and cuisines. Brands need to work to understand the Asian palate, which differs within



the region, along with gaining knowledge of local markets and undertaking research to localise the taste of their plant-based food products, in order to capture consumer attention.

## Homegrown competition heats up

Local competition is increasing. Regional players are starting to chip away at Oatly's success, such as Singapore's OATSIDE, whose homegrown products are fast replacing Oatly's in the city-state and are already present in eight Asian markets within 18

months of launch. And Hong Kong legacy giant Vitasoy, a company with HK\$6.5 billion dollars annual revenue, whose market-leading products are well-loved by consumers, and whose established distribution channels mean that it likely faces lower costs and fewer supply chain difficulties than a brand that is newer to the region. 90% of its SKUs are plant-based, comprising soy, oat, almond and rice milks and teas. In August this year it also launched plant-based yoghurts and ready-to-drink nutritional almond and oat milk beverages, dubbed Plant+, aimed towards consumers looking for healthier, sustainable alternatives. Vitasoy's wide range is designed to cater for local tastes, proving that a localised approach is key to success in the region.



# Shiok Meats cultivates a fish-free future

Shiok Meats, based in Singapore, is pioneering cultivated seafood on behalf of the city-state and the region. The startup unveiled the world's first cultivated lobster meat in 2020, then went from strength to strength in 2021, debuting the world's first crab meat in August and ending the year with the opening of its "mini-plant", a first-of-its-kind R&D facility dedicated to cultivated seafood in Singapore. The new facility encompasses capabilities in process optimisation, technology transfer, and data-based development for cell-based seafood, and is the first step towards scaling production. Now, Shiok is targeting Big Food and major multinational corporations to scale faster and broader, making the most of the expertise - and cash - that comes with massive enterprise.

## Strategic partnerships: key for continued success and growth

In July 2022, Shiok signed a memorandum of understanding with Vietnam's largest conventional shrimp producer and exporter, Minh Phu Seafood, to develop a combined R&D facility to help bring cultivated seafood to Asia. This strategic partnership will hopefully prove that one of the best routes to market for alternative protein is to work with, not against, the companies that have been successfully working with conventional protein for many years, capitalising on their knowledge and bringing them onto the journey to an animal-free future.

In August 2022, Shiok Meats' subsidiary Gaia Foods entered into a strategic partnership with Swiss deep food tech startup Mirai Foods, to bring cultivated beef to market with Mirai Foods' bovine muscle and fat stem cells, which Shiok says are "hard to come by" in Singapore. While Mirai is providing tools to

enable Shiok to bring products to market, Shiok is providing regulatory information and know-how to the Swiss food tech. Sharing of information and resources, rather than startups working in silos, will likely be key to a successful cultivated foods market.

## On track for commercialisation in 2023

All of these strategic decisions are designed to help Shiok on its path to scaling up production and eventual commercialisation following regulatory approval, targeted for 2023. We have no doubt there will be more developments in the pipeline.



# South Korea: an alt protein market to watch

South Korea's alternative protein scene has exploded in 2022. Across the country, big businesses and startups are sharpening their focus and starting to make significant moves in the industry. This year, for the first time, South Korean plant-based and cultivated meat companies appeared on the country's list of early-stage startups that have raised over 5 billion won (\$3.8 million) within the last year. The majority of South Korea's alternative protein industry comes from domestic businesses, rather than external brands, meaning that the sector is creating something by Koreans, for Koreans, but is also encouraged to scale and seek international sales early in the journey in order to see growth.

Add to this a government keen to support alternative protein - in fact, South Korea's National Plan for 2022 includes official guidance for alternative protein for the first time, including a potential first step towards a regulatory framework for cultivated protein. Plus, while consumer adoption in South Korea is still behind the US and Europe, as a nation, Koreans are particularly keen to get behind new trends, so adoption could build faster from a smaller base than in other parts of the world. Together, these factors help to create the perfect recipe for South Korea to potentially become a global leader in the sector.

## Big Food bets big on plant-based

At the end of 2021, the Korea International Trade Association predicted that plant-based meat will overtake conventional meat for market share by 2040, and South Korea's businesses are certainly trying to make it happen. Unlike other countries in Asia Pacific, and globally, South Korea's plant-based meat innovation is driven by Big Food companies who have identified the opportunity in the space, rather than startups. Some of these large companies have raised big rounds, and developed full ranges of plant-based alternatives, covering both Korean and

Western formats. This offers an easy win for retailers because these businesses already have an established distribution network, have proved their reliability in terms of supply chain, and can offer a full package.

In November 2021, Zikoooin, the company behind South Korea's leading vegan beef brand Unlimeat, raised \$23 million to build one of the largest plant-based meat factories in Asia, with a land area spanning





over 14,650 square metres, in the hope of becoming one of the leading exporters of vegan meat in the region. Unlimeat is currently sold across Taiwan, Hong Kong, China, Vietnam, and Australia, and is making waves in the US, where Zikoo is currently crowdfunding to launch its vegan jerky nationwide. Armored Fresh, formerly known as Yangyoo, confirmed a \$23 million pre-Series B raise in June 2022, just five months after a \$10 million raise, and is planning to launch its almond milk-based vegan cheeses into the U.S. market.

A key factor in plant-based growth in South Korea is accessibility to options. We're seeing this through chain foodservice outlets, such as Burger King, Starbucks and Subway, offering vegan alternatives to consumer favourites, which also helps to spark interest, capitalising on the trend-follower mindset.

## On track for cultivated meat commercialisation

South Korea's cell-based meat startups are making progress towards commercialisation, often with a tiny fraction of the funding that EU/US companies have to work with, and are working on significantly shorter timescales than their EU/US counterparts for technology development. In December 2021, CellMEAT unveiled a fetal bovine serum-free cell culture media, ahead of the US's UPSIDE Foods, which claimed to be first. It then debuted the world's first cultivated Dokdo shrimp and, in April 2022, closed a \$8.1 million Series A funding round.

Also at the end of 2021, DaNAGreen secured ₩8 billion (approx. US\$6.7 million) Series A funding to build an automated cultivated meat production system ahead of commercialisation in 2024. In February 2022, Space F announced that, as well as improving on its original pork prototype, it had also successfully cultivated Korea's first chicken and beef products. In April 2022, TissenBioFarm received US\$400,000 from Mirae Holdings to further develop its manufacturing platform that can produce cultivated and plant-based meats with realistic marbling. In June 2022, Simple Planet announced a breakthrough in its development of cultivated meat with a higher content of unsaturated



fatty acids, important in preventing vascular diseases, proving that designing meat could help with global health issues as well as supporting a sustainable food system.

Plus, in March 2022, one of Asia's largest food and biotech companies, CJ CheilJedang, announced its plans to enter the cultivated sector in partnership with KCell Biosciences, a startup focused on cell culture media. The two are constructing a cell culture media plant in Busan, which will be the largest of its kind in Korea and the second largest in the whole APAC region.

Korea is also making progress in mycelium, as Mycel raised \$10 million pre-Series A funding in August 2022 to explore materials and meat from the versatile mushroom root structure.

## The rapid rise of alt protein in South Korea

As we see these companies making giant leaps towards an animal-free future, responding both to consumer wants as well as industry needs, it's becoming clear that South Korea is a market to watch, and support. The country's progress from almost no alt protein industry three years ago to where it is now shows clear intent, and a desire to lead the region to success.

## Local funds & support gather momentum

As the alternative protein industry in APAC has gathered momentum, so, too, has the ecosystem which supports it, albeit at a slower pace. This ecosystem provides not only financial support, but also offers important insight and analysis into both consumer trends and technology,

supports regulatory growth and industry research and development, and drives change through building awareness and connecting key players. The ecosystem growth has been especially obvious through certain key events throughout the year since our last report.





## APAC Venture Funds FTW

There are several venture capital firms and accelerators based in the region, and a few have closed significant funds in the last twelve months. The benefits of local VCs are many: they are, for the most part, focused on homegrown technology, and supporting growth in APAC from within; they often have a wealth of knowledge and local connections which can help startups to grow in a more focused way; they likely have better knowledge of the region's various populations, and their needs, so can help to shape development that is relevant to the most populous region in the world.

September 2021 saw New York and Hong Kong-based Lever VC close its alternative protein fund, Fund I, with \$80 million. The round attracted funding from “several of the world’s largest meat companies”, alongside ingredient and food commodities, European fermentation companies, and two of the world’s largest agri-feed firms from China and Southeast Asia. At the time, Lever VC managing partner Nick Cooney said that the support from large food corporations is a “signal of the confidence in the disruptive potential of novel food technologies”.

Better Bite Ventures\* launched in February 2022 with a \$15 million fund and an initial portfolio of ten Asia-Pacific alt protein startups. It's the first fund of its kind dedicated entirely to alternative protein investments in the region, and primarily supports at founding, pre-seed and seed stages. At the time, Michal Klar, General Partner at Better Bite Ventures, commented: “We’re here to invest in bold founders building Asia’s future food-tech unicorns. Now is the time for Asia – we believe home-grown companies with local insights will take a leading role in this rapidly growing market.”

Singapore-based venture capital firm Good Startup, which is focused on alt protein, closed its Good Protein Fund 1 with \$34 million in May this year. Good Startup supports mainly early-stage companies, and has already invested in Hong Kong-based cultivated seafood startup Avant, among others.

Aside from these, other VCs, such as Brinc, Bits x Bites, Blackbird Ventures and Ahimsa, are working



hard to support Asia Pacific’s alternative protein startups. Plus, Temasek, Singapore’s sovereign fund, is a major supporter of the food tech industry and a venture leader in the alternative protein space, having made notable early investments in Eat Just and Impossible Foods, alongside supporting local startups, such as Float Foods and TurtleTree Labs.

When compared with Europe and the US, though, the number of alt protein-focused VCs in Asia Pacific falls significantly short - there are under ten - meaning that the region’s startups may be more likely to look further afield for support, or even move operations entirely to what they perceive to be a more supportive ecosystem, as with Sophie’s Bionutrients’ move to the Netherlands earlier this year.

## Platforms for Support

For startups, especially those outside of the main tech hubs in the region, it can be difficult to access the funds and other support that they need to make their tech a reality. After all, where to start? In July 2022, the Good Food Institute APAC announced a new database, built in collaboration with FoodInnovate, that lists the funding schemes offered by the Singaporean government to alternative protein companies. Plus, in November 2021, Temasek established a new platform, the Asia Sustainable Foods Platform, dedicated to scaling and commercialising sustainable foods and alternative proteins. The platform, run by food tech professionals, provides R & D advisory services, pilot production facilities, and connects startups with manufacturing and investment support to tackle “friction-to-adoption” in the region.

*\*Disclaimer: Green Queen’s founder and editor-in-chief, Sonalie Figueiras, is a venture partner at Better Bite Ventures.*

# APAC Cellular Agriculture Coalition launches to boost industry

Competition, within any sector, creates startups and innovation, but the barriers to market entry increase as the space becomes crowded. If several companies are working on the same tech, towards the same goal, it simply becomes a race to the finish line. This may be fine in certain sectors, but when the end goal - in this case, literally saving the planet and securing the global food system - is so pressing, it can be far better for independent companies to recognise the value of cooperation.

To that end, the APAC Society for Cellular Agriculture launched in March 2022. The new coalition, whose management committee includes founders from some of Asia Pacific's most pivotal cultivated foods startups, has as a mission to offer member companies access to shared information. While each individual member company is working on reaching its own milestones, all share one important common goal: bringing cultivated products to market.

## Mutual benefits and faster industry progression

The coalition's key priorities include interacting with consumers, driving consumer awareness and understanding of the benefits and safety of cultivated foods, since one of the biggest stumbling blocks for the sector is public acceptance. Alongside this, the coalition will focus on building knowledge and acceptance and developing straightforward regulatory frameworks for the cellular agriculture sector, helping it to gain approvals for commercialisation.

The society's eleven founding members include Singapore's Shiok Meats and Gaia Foods, Hong Kong's Avant Meats, China's CellX and Joes Future Food, South Korea's DaNAgreen and SeaWith,

Japan's IntegriCulture, and Israel's Aleph Farms, SuperMeat and Steakholder Foods. All of these share a common vision: cultivated meat and seafood products as a key global food supply chain solution, as well as to guarantee food security, human health, sustainability and animal welfare.

The coalition is designed as a "kick-start" for the entire sector, bringing harmonised values and goals together for mutual benefit and industry progression, which, after all, is the name of the game. As the saying goes: two heads are better than one. In this case, eleven stellar founding companies working together could help change the face of food production forever.

## Nomenclature consensus

In October of this year, the APAC Society for Cellular Agriculture, along with other major players in the cultivated foods industry, came to a consensus around naming conventions: in APAC, the preferred English-language term for the category is "cultivated". Along with the Good Food Institute APAC and more than 30 other key industry stakeholders, including multinational companies Cargill and Thai Union, as well as regional coalition groups China's Cellular Agriculture Alliance, Cellular Agriculture Australia, the Japan Association for Cellular Agriculture, and Korean Society for Cellular Agriculture, the APAC Society for Cellular Agriculture signed an historic memo of understanding during Singapore International Agri-Food Week (SIAW). "Nomenclature and regulatory harmonisation are vital for the long-term success of the cultivated foods industry and this MOU establishes a regional precedent that can be replicated in other markets around the globe," said APAC Society for Cellular Agriculture President Dr. Sandhya Sriram and Program Manager Peter Yu.



## Global alliance looks to advance worldwide cultivated industry

During the same week, the APAC Society for Cellular Agriculture was joined by US-based Alliance for Meat, Poultry, and Seafood Innovation and Cellular Agriculture Europe at a first-of-its-kind meeting to formalise the launch of a global cultivated foods alliance. These three organisations represented 31 of the world's leading cultivated meat, seafood, and dairy companies, which have collectively raised over \$2 billion in funding so far. At the time, Mirte Gosker, Managing Director of GFI APAC, commented that “global challenges require global solutions. By bringing together regional industry coalitions from Europe, the US, and Asia Pacific, this timely, new worldwide alliance has the potential to be a game-

changer.” The new alliance hopes to engage more strategically with the likes of Codex Alimentarius (Food Code), a joint effort between the UN Food & Agriculture Organization and the World Health Organization, designed to create international food standards, and potentially shaping future policy surrounding cultivated foods.

As Yu and Sriram explain, “The APAC-SCA group has established itself as a key driver behind regulatory consistency, consumer insights, and promotion of the cultivated foods industry in general; we represent the combined efforts of the leading cultivated food companies in Asia Pacific. With the launch of the tripartite global alliance – it’s with excitement that our reach has extended and that we can collaborate in synergy with our EU and US counterparts, venturing from ‘Regional’ to ‘Global’ in our efforts of shaping the future of food, sustainability, and food security.”



# Thailand's SPACE-F project takes off

Thailand's National Innovation Agency, Thai Union Group Plc., and the Faculty of Science at Mahidol University collaborated in 2019 to launch the SPACE-F Project, designed to make the country the "Silicon Valley of food for Southeast Asia" by bringing investment opportunities into its food tech sector to achieve economic success not only in Thailand, but also globally.

Since its inception, the SPACE-F project says it has

facilitated a suitable and conducive ecosystem for the development of deep tech for the food industry, with the aim of putting Bangkok on the map as a food tech capital, and to date it has mentored more than 50 startups. The project is focused on companies working within health and wellness, alternative proteins, smart manufacturing, packaging solutions, novel food and ingredients, biomaterials and chemicals, restaurant tech, food safety and quality and intelligent food services.





## A focus on domestic innovation paired with local ingredients

Dr. Pun-Arj Chairatana, Executive Director of NIA, says that Thailand has sufficient raw materials to meet growing consumer demands and support international food security, alongside its “top-notch logistics service”, which “make the Thai food industry exceptional and position Thailand as the kitchen of the world.” However, he says, utilisation of technology and innovation is lacking, since “most of the players in the sector are stuck at the SMEs (small and medium-sized enterprises) level where their focuses are mainly on domestic consumption. The NIA, therefore, stepped in to encourage the use of innovation in this particular industry. Intending to feed the world through innovation, the ‘SPACE-F’ project was initiated in 2019 to incubate and accelerate the growth of FoodTech startups in Thailand.”

Now, it’s looking to encourage the creation of innovative products and services. “Innovative services help attract joint venture investment, and enhance competitiveness as most competitors are often focused solely on innovative manufacturing,” it says. The project will continue to provide mentorship for startups through its programs, ranging from the Incubator for new startups and the Accelerator mentorship that speeds startup growth by adding value to an existing business.

## The importance of attracting foreign talent

As Covid restrictions ease, the SPACE-F project is also looking to attract foreign food tech startups to Bangkok with funding from Thai companies. “This will enable Thai entrepreneurs and startups to use more deep-tech, learn international business models, and exchange innovative knowledge that is crucial for the sustainable growth of their food businesses.”



“By the end of 2025, the FoodTech industry is expected to be worth 7.76 trillion baht,” said Dr. Chairatana. “And with our vision and commitment to supporting the startup ecosystem, NIA will continue to drive Bangkok towards becoming the Food Silicon Valley.”

Thailand has a handful of active plant-based food startups that serve the domestic market, including More Meat, Let’s Plant Meat, Meat Avatar, Mantra, Swees and Sesamilk Foods, and one precision fermentation dairy company, Muu (still in stealth). So far, there are no cultivated meat companies in the country. On the MNC front, Charoen Pokphand (CP) Foods Pcl is a leader in terms of plant-based meat products, and its own brand, MEAT ZERO, has significant retail distribution. Further, NR Instant Produce Pcl, a large Thai food manufacturing company that produces jackfruit-based pork alternatives and vegan snacks as part of its wider offering, went public on the Stock Exchange of Thailand in October 2020.

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# 3

# Funding & Investment

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# FUNDING & INVESTMENT

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2021 was a record year for alternative protein investments globally, with data from the Good Food Institute showing that \$5 billion was raised by companies creating sustainable alternatives to conventional proteins, marking 60% growth year-on-year. In fact, in 2021, total food tech funding had doubled relative to 2020, and hit nearly \$40 billion, a truly stellar year.

2022 has seen funding slow across the board, with data from PitchBook showing that total food tech funding declined by 23% in total deal value in the second quarter of 2022, dropping from \$6.9 billion in Q1 2022 to \$5.6 billion in Q2 2022. However, according to the Good Food Institute, alternative protein funding declined only 9% quarter-over-quarter, marking a much smaller decline.

Nonetheless, Asia Pacific celebrated a fair few record-breaking regional rounds in 2022, with TiNDLE's \$100 million Series A, the largest in plant-based globally, Vow's \$49.2 million Series A, the largest in

cultivated meat ever, and Changing Biotech's \$22 million Series A, the largest in precision fermentation in the region, so it's fair to say that the gap between other regions and Asia Pacific is closing.

Compared to more mature geographies like Europe or the United States, there are fewer funding options for companies in Asia Pacific at all stages. However, those who are here are mission-focused and provide lasting support. Leading accelerators, such as Hong Kong's Brinc, Singapore-based Big Idea Ventures and GROW, Thailand's SPACE-F, and Dao Foods and Lever in China, offer tailored incubator and accelerator programs to empower startups to change the future of food and have played a key role in helping build out the alternative protein industry pipeline over the past couple of years. Still, more options are needed. Most recently, Better Bite Ventures introduced First Bite, a new funding mechanism for very early stage founders across the APAC region. The VC will invest US\$50,000 into idea-stage founder teams to help get them started in the sector.





# CASE STUDY: BRINC

## LEVERAGING ITS LOCATION IN THE GATEWAY TO ASIA TO ACCELERATE EXCELLENCE ACROSS THE GLOBE



*The Brinc team and portfolio companies (Orbillion Bio, Haofood, Umami Meats and Magic Valley) at Singapore Agri-food Week in October 2022*

Brinc is a venture capital and accelerator firm based in Hong Kong. Since 2018, Brinc has invested in over 50 food technology companies around the world working towards a more sustainable, equitable, and healthy food future, including Alternative Protein, Novel Food Ingredients, Personalised Nutrition Platforms, and more. By leveraging its ecosystem and investor network, Brinc can ensure founders become investor ready and succeed in their scale-up and commercialisation journeys.

“When selecting startups for our accelerator programs, we look at two things: team and tech. It’s about getting to know the founders and working out whether the team has the ability to execute their plan. We pay close attention to the team’s established network in both the food and tech sectors, their track record, founders’ past experiences, personal backgrounds and more to give us insight into who

they are and how they work. In terms of the tech, it’s no longer enough to say that you’re building the next vegan chicken nugget; we need to know that their pitch is technologically defensible, has potentially strong IP, and that the company will be able to sustain itself beyond venture capital and investment,” says Nicole Lee, Program Manager - Food Technology at Brinc, who is bullish on finding the right startups for Brinc’s flagship food tech program, which accelerates early-stage startups that are changing the future of food and offers funding, expert mentorship, and access to industry resources and connections.

In terms of the technology Brinc is looking to accelerate, Lee’s view is that the alt protein space is diversifying rapidly, leading to a realisation amongst startups that they can be a part of the bigger picture, rather than always focused on the end product, as is reflected in the changing makeup of its cohorts.

“I think the diversification of the space signals that startups are realising that they don’t necessarily need to have the technology to produce an end product. Instead, companies see the potential to innovate on how cultivated meat is made, for example, by providing B2B solutions. This is demonstrated by Brinc’s portfolio companies Cellivate Technologies, which has developed patented nanotechnology to improve the efficiency of growing cells, and Alt Atlas, which is working on an AI-powered platform of cell lines and software to scale up alternative protein production. We’re very excited about technologies that could make the cell-based production process more efficient, and hope to keep supporting these companies in the future.”

## Customised program content to support a changing market

Brinc is constantly adapting its program content to the needs of the companies it supports, explains Lee: “We’re working hard to make our programs more tailored to individual startups’ needs so that we’re actually delivering content that is useful for their growth, especially in terms of our group sessions. In the past few years, our cohorts have evolved to support not just plant-based companies, but a mix of technology types. To support companies in the cellular agriculture space, we’re looking at updating our curriculum to include aspects like navigating conversations with regulatory bodies, and finding food tech talent in a difficult market. We’re focusing on more specialised content to really drive engagement and enhance founders with all of our resources.”

Another important element Brinc is planning to increase in its programs is peer-to-peer learning; a lot of its most popular sessions in the past have been with its program alumni, because real founder experience is highly valuable to startups on similar paths. Plus, more opportunities could arise from greater collaboration, as Lee explains: “Given the sheer diversity of technology in our cohorts, we’re looking at whether there are startups that can work together to learn from each other, since they’re focusing on different parts of the value chain.”



Since 2018, Brinc has invested in over 50 food technology companies around the world working towards a more sustainable, equitable, and healthy food future

## Leveraging its geographical advantage to help startups win in Asia

Brinc is one of a few accelerators located in, and dedicated to, Asia, which Lee sees as a geographical advantage. “I think our position in Hong Kong is very unique. Hong Kong is a gateway to both Asia and mainland China, and is very strong in terms of its capital and resources. We remain confident in our geographical advantage, and note that there’s still so much opportunity here. We’re always looking for companies working on animal-free solutions that suit local tastes and cuisines, whether that be startups that are coming out of the region, or those abroad hoping to expand into Asia. Examples include our fall 2021 cohort members Magic Valley (Australia) and Phuture Foods (Malaysia): while Magic Valley is working on a cultivated lamb product tailored to Australian taste buds, Phuture Foods has brought out dishes such as Indo Nasi Tong and Nasi Lemak with their high-protein chicken product targeted at Southeast Asian consumers.”

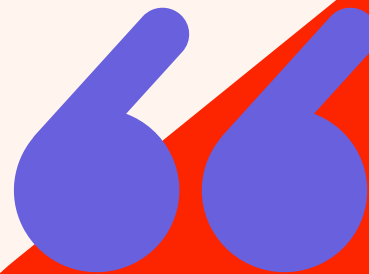




*Malaysian Nasi Lemak by Phuture Foods*

Brinc also has an accelerator program with DayDayCook, a content culinary platform based in China that has a consumer packaged goods line of mainly plant-based ready meals. “We designed the program to leverage DayDayCook’s commercial position in China, to support startups that are looking to expand into the Chinese market, and to get more in touch with the Asian ecosystem, leveraging the partners that DayDayCook already has within its network as well as its brand presence in China”. Brinc just closed applications for the next program, and is currently going through the selection process.

Today, Brinc has a portfolio of 150+ startups - more than a third of which are in the AgriFood space - and has a team dedicated to supporting these companies once they graduate from the accelerator programs. “Beyond the program, we are there to support our companies. Although this is on more of an ad-hoc basis, we hope that our founders see us as a valuable resource as they continue to fundraise and develop. Our FoodTech portfolio companies have raised an average of US\$3.2M in their rounds subsequent to the accelerator program, and we are excited to see what lies ahead for our growing FoodTech portfolio,” states Lee.



**I think our position in Hong Kong is very unique. Hong Kong is a gateway to both Asia and mainland China, and is very strong in terms of its capital and resources. We remain confident in our geographical advantage, and note that there’s still so much opportunity here.**

*Nicole Lee, Program Manager - Food Technology, Brinc*



## Top 10 APAC Alt Protein Funding Rounds

### STARFIELD

**\$100M SERIES B**

**CHINA, PLANT-BASED MEAT - JAN 22**



Chinese plant-based meat company Starfield Food Science & Technology made history in January 2022 with a \$100 million Series B investment round, the country's largest-ever for a vegan protein brand. Beijing's Primavera Capital Group led the round, and other investors included Alibaba's CSO Ming Zeng and existing backers Joy Capita and Lightspeed China partners, amongst others. Starfield is using the funding to significantly increase its production capacity and R&D capabilities, specifically to enhance the taste and texture profiles of its plant-based meats.

### OATSIDE

**\$65.5M SERIES A**

**SINGAPORE, PLANT-BASED DAIRY - AUG 22**

In August 2022, Singapore's first oat milk brand, OATSIDE, closed a \$65.5 million Series A funding round, co-led by Temasek Holdings, GGV Capital and Arabica International, plus existing investors Wee Teng Wen and Proterra Investment Partners Asia. OATSIDE said the funding will help it to expand production of its milk, which was specifically developed for Asian palates, and increase its reach across Singapore and the greater Asia-Pacific region.



### NEXT GEN FOODS

**\$100M SERIES A**

**SINGAPORE, PLANT-BASED MEAT - FEB 22**

Singaporean plant based meat startup Next Gen Foods, the company behind vegan chicken sensation TiNDLE, secured a record breaking \$100 million in February 2022. The round broke many records: it is the largest single Series A investment in the plant-based meat industry globally, the largest Series A in the alt protein industry in Asia Pacific, and the largest Series A in the plant-based meat sector regionally to date. Investors included Alpha JWC, EDBI, and MPL Ventures, as well as returning backers Temasek, K3 Ventures, Bits x Bites and GGV Capital. Funding is being used to increase TiNDLE's distribution across all 50 US states and the rest of the world, alongside expanding its R&D with the aim of developing more sustainable protein products.





## NOURISH INGREDIENTS

**\$28.6M SERIES A**

**AUSTRALIA, ALTERNATIVE MEAT FATS - OCT 22**



With backing led by Hong Kong-based billionaire Li Ka Shing's VC Horizon Ventures, Australian startup Nourish Ingredients raised \$28.6 million in a Series A funding round to further develop fats and oils via precision fermentation for the alternative protein sector. Nourish is anticipating 2023 launches for its fat in alternative protein products in Australia and other parts of the world.

## VOW

**\$49.2M SERIES A**

**AUSTRALIA, CULTIVATED MEAT - NOV 22**

Vow, which claims to be "Australia's first cell-based meat company," raised \$49.2 million in a Series A funding round co-led by Blackbird and Prosperity7 Ventures to launch its first product brand, Morsel, a cultivated umami quail product that was created from its cultured meat technology, into Singapore restaurants by the end of 2022. It is the largest funding round for cultivated meat in Asia Pacific, and the largest Series A in the cultivated sector on record globally.

## ALL G FOODS

**\$25M SERIES A**

**AUSTRALIA, PRECISION FERMENTATION DAIRY - AUG 22**



Australia's All G Foods secured \$25 million in a Series A round led by UK-based Agronomics in August 2022. The startup is the country's first to develop milk alternatives via precision fermentation, and its founder and CEO, Jan Pacas, commented at the time: "Over the next seven years we aim to make it cheaper to buy than cow-based dairy." All G Foods is also behind plant-based meat alternative brand Buds, which is already generating more than \$3 million in revenue after less than two years on the market.





## CHANGING BIOTECH

**\$22M SERIES A**

**CHINA, PRECISION  
FERMENTATION - AUG 22**

Changing Biotech, China's first precision fermentation dairy startup, emerged from stealth mode in August 2022 to announce a \$22 million Series A funding round, led by domestic agtech venture capital fund Bits x Bites and featuring Eight Roads Ventures, Sherpa Healthcare Partners, and Hillhouse. The round is the second-largest for the country's alt protein sector to date, and will help the startup to further develop its single-cell milk protein.



## ARMORED FRESH

**\$23M PRE-SERIES B**

**SOUTH KOREA, PLANT-BASED  
DAIRY - JUN 22**

In June 2022, South Korea's Armored Fresh, formerly Yangyoo, confirmed a successful pre-Series B raise totalling \$23 million. The round was led by previous investor the Korea Development Bank, with participation from Hanwha Investment & Securities, Daesung Startup Investment, Collaborative Fund and Sejong Venture partners, among others. The funding will support a move into the US market, when the startup will debut its almond milk-based cheeses.



## SPACE F & PARTNERS

**\$15M, GRANT**

**SOUTH KOREA, CULTIVATED  
MEAT - MAY 22**

In May 2022, South Korean cultivated meat startup Space F, along with four partners, won a grant of \$15 million from the Alchemist Project, an R&D initiative supported by South Korea's Ministry of Trade, Industry and Energy, to continue researching cultivated meat. The focus of the project is the development and industrialisation of cultivated meat production equipment, with a view to commercialisation.

## WIDE OPEN AGRICULTURE

**\$20M PRE-SERIES B**

**AUSTRALIA, PLANT-BASED  
DAIRY - DEC 21**

Australia's Wide Open Agriculture announced it had secured \$20 million in December 2021 to create a domestic plant-based production facility for its low-carbon oat milk, instead of importing oats from Italy, and to support the expansion of a secondary site dedicated to lupin-based protein development.





## APAC Alt Protein 2022 Funding Table (Dec 2021 - Nov 2022)

|   | COMPANY               | AMOUNT         | STAGE            | CATEGORY               | DATE          |
|---|-----------------------|----------------|------------------|------------------------|---------------|
|    | Starfield             | \$100 Million  | Series B         | Plant-based            | January 2022  |
|    | Tindle                | \$100 Million  | Series A         | Plant-based            | February 2022 |
|    | Oat Side              | \$65.5 Million | Series A         | Plant-based            | August 2022   |
|    | Vow                   | \$49.2 Million | Series A         | Cultivated             | November 2022 |
|    | Nourish Ingredients   | \$28.6 Million | Series A         | Fermentation           | October 2022  |
|    | All G Foods           | \$25 Million   | Series A         | Fermentation           | August 2022   |
|  | Armored Fresh         | \$23 Million   | Pre-SeriesB      | Plant-based            | June 2022     |
|  | Changing Biotech      | \$22 Million   | Series A         | Fermentation           | August 2022   |
|  | Wide Open Agriculture | \$20 Million   |                  | Plant-based            | December 2021 |
|  | Space F               | \$15 Million   | Government Grant | Cultivated             | May 2022      |
|  | Leaft Foods           | \$15 Million   | Series A         | Plant-based            | April 2022    |
|  | Change Foods          | \$12 Million   | Seed extension   | Fermentation           | February 2022 |
|  | Provectus Algae       | \$11.4 Million | Pre-SeriesA      | Plant-based (algae)    | December 2021 |
|  | Avant                 | \$10.8 Million | Series A         | Cultivated             | July 2022     |
|  | CellX                 | \$10.6 Million | Series A         | Cultivated             | May 2022      |
|  | Mycel                 | \$10 Million   | Pre-Series A     | Plant-based (mycelium) | August 2022   |

|  | COMPANY           | AMOUNT         | STAGE        | CATEGORY     | DATE           |
|--|-------------------|----------------|--------------|--------------|----------------|
|    | CellMEAT          | \$8.1 Million  | Series A     | Cultivated   | April 2022     |
|    | IntegriCulture    | \$7 Million    | Series B     | Cultivated   | January 2022   |
|    | Green Rebel Foods | \$7 Million    | Pre-SeriesA  | Plant-based  | March 2022     |
|    | DaNAgreen         | \$6.7 Million  | Series A     | Cultivated   | January 2022   |
|    | Eden Brew         | \$5 Million    |              | Fermentation | June 2022      |
|    | ProForm Foods     | \$5 Million    |              | Plant-based  | December 2022  |
|  | Haofood           | \$3.5 Million  | Seed         | Plant-based  | April 2022     |
|  | Fënn Foods        | \$3 Million    |              | Plant-based  | February 2022  |
|  | Me&               | \$2.5 Million  | Seed         | Cultivated   | March 2022     |
|  | Umami Meats       | \$2.4 Million  | Pre-Seed     | Cultivated   | March 2022     |
|  | Miruku            | \$2.4 Million  | Seed         | Fermentation | March 2022     |
|  | Brown Foods       | \$2.36 Million | Seed         | Cultivated   | June 2022      |
|  | Sustainable Foods | \$2.15 Million |              | Plant-based  | April 2022     |
|  | Shaka Harry       | \$2 Million    | Seed         | Plant-based  | July 2022      |
|  | TissenBioFarm     | \$1.6 Million  | Pre-Series A | Cultivated   | September 2022 |

|   | COMPANY                | AMOUNT        | STAGE            | CATEGORY            | DATE          |
|---|------------------------|---------------|------------------|---------------------|---------------|
|    | Phuture                | \$1.5 Million |                  | Plant-based         | June 2022     |
|    | Good Food Technologies | \$1.5 Million | Seed             | Plant-based         | March 2022    |
|    | Marvelous Foods        | \$1.2 Million |                  | Plant-based         | January 2022  |
|    | Phyx44                 | \$1.2 Million | Seed             | Fermentation        | November 2022 |
|    | Eighth Day Foods       | \$1 Million   | Seed             | Plant-based         | February 2022 |
|    | Alt Co.                | \$1 Million   |                  | Plant-based         | June 2022     |
|  | Change Foods           | \$1 Million   | Government Grant | Fermentation        | January 2022  |
|  | Off-Piste Provision    | \$917,000     | Pre-Seed         | Plant-based         | December 2021 |
|  | Opo Bio                | \$900,000     | Seed             | Cultivated          | November 2022 |
|  | Newfish                | \$816,000     | Series A         | Plant-based (algae) | May 2022      |
|  | Seawith                | \$720,000     |                  | Cultivated          | February 2022 |
|   | TissenBioFarm          | \$400,000     |                  | Cultivated          | April 2022    |
|  | Daisy Lab              | \$150,000     |                  | Fermentation        | February 2022 |
|  | All G Foods            | Undisclosed   |                  | Plant-based         | February 2022 |
|  | Greenest               | Undisclosed   | Pre-Seed         | Plant-based         | August 2022   |



# APAC's Top 10 Alt Protein Markets

IN PARTNERSHIP WITH



In order to identify the top markets in the region, we worked with the team at GFI APAC to gather data on total funding per geography and total number of alternative protein startups.

The data, in US\$ millions, represents all information from 2010 until the close of H1 2022 as available via funding aggregators and from the Good Food Institute's global database of companies.

| COUNTRY / REGION | TOTAL COMPANIES | FUNDING TOTAL (US\$) |
|------------------|-----------------|----------------------|
| SINGAPORE        | 36              | \$ 213.57            |
| INDIA            | 26              | \$ 13.34             |
| JAPAN            | 26              | \$ 76.32             |
| CHINA (MAINLAND) | 25              | \$ 175.66            |
| AUSTRALIA        | 24              | \$ 169.35            |
| SOUTH KOREA      | 12              | \$ 79.93             |
| THAILAND         | 9               | -                    |
| NEW ZEALAND      | 8               | \$ 31.37             |
| MALAYSIA         | 7               | -                    |
| INDONESIA        | 5               | \$ 9.00              |

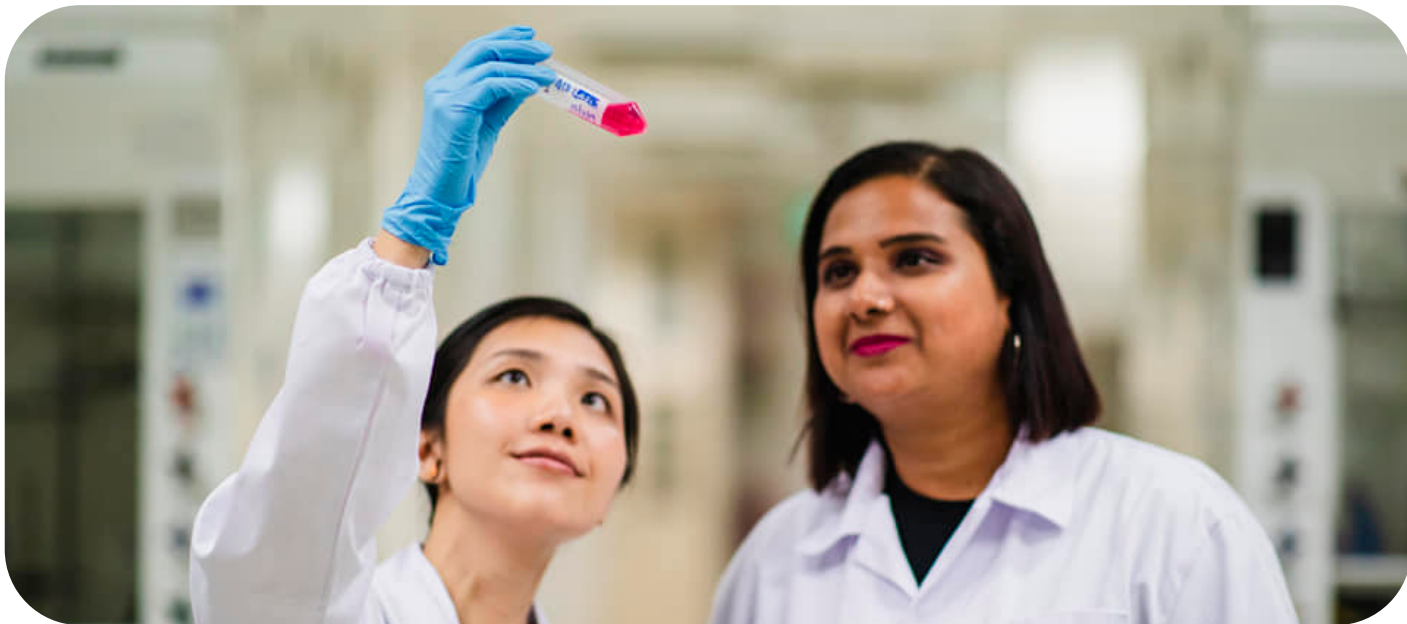
Notes:

1. Mainland China does not include Hong Kong SAR or Taiwan.
2. Investments refers to accelerator and incubator funding, angel funding, seed funding, equity and product crowdfunding, early-stage venture capital, late-stage venture capital, private equity growth/expansion, capitalization, corporate venture, joint venture, convertible debt and general debt completed deals.

*About GFI APAC:*

*The Good Food Institute Asia Pacific (GFI APAC) is at the heart of the region's alternative protein development as the industry's leading think tank. Their work is essential to empowering governments, corporates and startups working to change the food system, particularly on the research, policy and regulation front.*

## APAC's Top Female Alt Protein Investors



While the alternative protein sector in Asia Pacific has seen a major boost in investment over the past couple of years, most of the funding is dominated by men and/or male-led VCs.

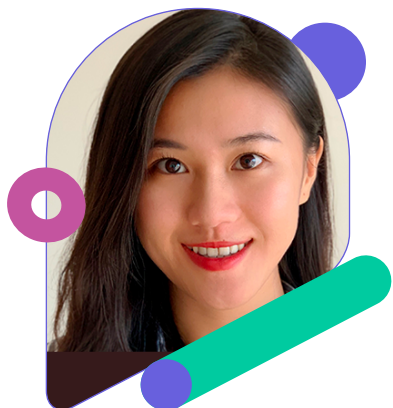
Alternative protein necessitates a global shift, and we hope it leads to a cascade of change throughout the world. To that end, we're here to highlight the top female investors changing the future of food in the region. Their numbers may be small, for now, but they are mighty - in most cases, as well as providing hard cash and expertise, they are also championing racial, socio-economic and gender diversity amongst founding teams, something desperately needed in all industries.



### DR DALAL ALGHAWAS

Program Director at Big Idea Ventures (Singapore)

Big Idea Ventures is a venture capital firm focused on the alternative protein ecosystem, including Chinese peanut protein startup Haofood and Singapore-based cultivated seafood pioneer Shiok Meats.



### LILY CHEN

Director at Lever Foods (China)

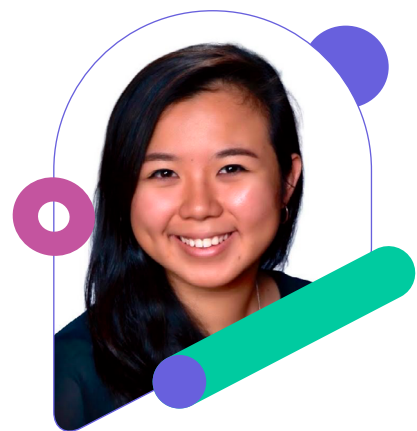
Lever China Alternative Protein Fund's team are early investors in alt protein pioneers, such as Beyond Meat and Impossible Foods, early investors in leading cultivated meat and dairy companies, such as Avant and TurtleTree Labs, and were the first investors outside of mainland China to invest in Chinese plant-based and cultivated protein startups.



## MATILDA HO

**Founder & Managing Director of Bits x Bites,  
Founder of Yimishiji (China)**

Bits x Bites is China's first food tech venture capital firm, focused on everything from plant-based protein innovators to indoor farming solutions. Some of the investments that Ho has led within the alternative protein world include Future Meat, InnovoPro and Wild Earth.



## NICOLE LEE

**Program Manager - Food at Brinc (Hong Kong)**

Venture company and accelerator Brinc debuted Asia's first food tech program in 2018 to accelerate early-stage businesses that are using technology to make our global food supply chains more efficient or sustainable. Alumni include Malaysia's Phuture Foods, Hong Kong's Avant, and Chinese biotech New Singularity.



## JENNY NG

**Co-Founder & COO at Green Monday (Hong Kong)**

The Green Monday group is a leader in the Asia-Pacific alternative protein space, designed to build a sustainable future in a comprehensive way. Its investment arm, Green Monday Ventures, has raised significant funds and supported industry leaders like Beyond Meat, TurtleTree and Perfect Day.

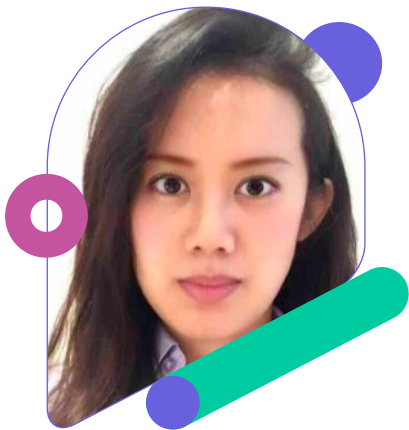


## DR CHRISTINE PITT

**Co-Founder & Executive Director at GROW, founder & CEO  
at Food Futures Company (Australia)**

GROW is Southeast Asia's first dedicated agrifoodtech accelerator investing in alternative protein startups, supporting companies such as Indonesia's Green Rebel Foods and Back of the Yards Algae Sciences. Food Futures Company provides programs to support, commercialise and invest in impact-focused startups and entrepreneurs.





## AMANDA SEE

**Vice President at Proterra Investment Partners Asia (Singapore)**

Proterra Investment Partners Asia invests in the Asian Food space, with a focus on companies which provide for food systems that are better for health and better for the earth. Its mission is to partner with entrepreneurs and business owners at all stages of their journey who share its vision of creating financial value whilst providing healthy, tasty and climate-conscious options for the discerning Asian consumer.



## VIRGINIA TAN

**Founding Partner at Teja Ventures (Singapore)**

Teja Ventures targets early stage technology companies for the future of consumption in Asia, including the future of food, and its portfolio includes Indonesian plant-based meat CPG leader Green Rebel Foods.



## ANGELA TAY

**Senior Investment Associate at AgFunder (Singapore)**

AgFunder leverages its media and research platform of over 85,000 members and subscribers to give access to the best deal flow and network to support its portfolio companies. Its alt protein fund, New Carnivore, has so far invested in Japan's IntegriCulture and Australia's Fable Food Co, among others.



## SAMANTHA WONG

**Partner at Blackbird Ventures, Mentor at Startmate (Australia and New Zealand)**

Blackbird Ventures' mission is to "supercharge" Australia and New Zealand's alt protein startups, and it just raised Australia's first billion-dollar fund. The firm has backed companies such as exotic cell-based meats maker Vow, plant-based meat brand Fable Food Co., and Sunfed, which makes animal-free bacon and chicken.

## VC SPOTLIGHT

### AGFUNDER



**Michael Dean**  
Founding Partner

Q

**What are your top 3 favourite APAC startups?**

There are so many great alt protein startups in APAC, but I'm going to be cheeky and include three of our portfolio companies. The first is Fable, which is a clean-label, meaty, mushroom-based meat alternative from Australia. They're having extraordinary success in premium QSR in Australia and are now expanding globally. The second is Green Rebel from Indonesia, who have developed a range of plant-based meals and meat alternatives with authentic Asian flavours. They are all great, but you've got to try their beefless rendang. The third is IntegriCulture from Japan. We see a lot of clean meat companies in the news, but IntegriCulture CEO Yuki and his team have been working away quietly in the background developing new products and their cell culture platform technology. They are definitely one to watch in 2023.

Q

**What do you consider the biggest challenges for APAC startups?**

Raising money is always challenging, but I think funding will continue to be difficult for alternative protein startups at least until mid-late 2023. I think APAC is a bit better positioned than other regions as we have not seen the same level of branded plant-based meat analogues hitting supermarket shelves here, but the sector is becoming more commoditized. Valuations became pretty frothy in the alt protein space following the Beyond Meat IPO which, although great for founders at the time, is now problematic for quite a few startups who are having to contemplate flat or even down rounds as a result.

Q

**Top three things you look for in a startup when investing?**

The quality of the team is always the first priority. I like to see a technical founder, and the technology or product being developed should be sufficiently differentiated and should have some sort of moat, preferably technical. But, perhaps most importantly, the product has to taste incredible. With plant-based proteins becoming increasingly commoditized, the ability to differentiate a product through flavour imparted by some proprietary technology or process is the holy grail for us as venture investors.

Q

**Top three things you look for in a founder?**

I'm looking for really smart founders with a history of exceptional performance of some form or another. It could be a successful exit from a previous startup, or some brilliant research, but they have to have something that sets them apart. They need to be resilient, resourceful and, preferably, a great storyteller. The ability to engage with and capture the imagination of a customer, new investor, or even a prospective new hire, and take them on a journey in a passionate and authentic way is an incredibly valuable skill.

Q

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

It hasn't had too much of an impact, to be honest. We didn't really participate in the rush to invest in everything alt protein following the Beyond IPO, so the investments we have made tended to be more focused on founders developing products that we think are a bit different. We've definitely slowed our investment pace a little, but startups like our portfolio companies Fable and Blacksheep Foods, that are building technology-driven product development platforms and are able to put differentiated, healthy and super-tasty plant-based food into consumers' hands are really what we hold out for.

Q

**What do you consider the biggest wins of 2022 for the industry/region?**

It has been great to see several large global chains stepping up regionally and supporting local alt protein brands and startups in APAC. Burger King, Dominos, IKEA and Starbucks, for example, have all added local alt protein products to their menus over the past 12 months or so. On the funding side, it was fantastic to see Next Gen Foods (Singapore) and Starfield Food & Science Technology (China) raise massive rounds, which is a huge boost for the local alt protein sector.

Q

**Which do you think are the most exciting countries/geographies to watch? Why?**

I think Singapore has done a great job in promoting alternative proteins as part of its 30 by 2030 strategy, and is quickly becoming a global hub for alt protein product development and manufacturing. We're also seeing exciting developments in the alt protein space and interesting startups emerging in countries like Indonesia, Malaysia and Thailand, who are leveraging local and novel ingredients and flavours to bring new products to market.

Q

**What has been the biggest surprise of the past three years in the industry?**

Nothing surprises me any more! Actually, the growth in funding levels and sheer number of startups emerging in the past three years across the spectrum of alt-meats and dairy, from plant-based to cellular and fermentation-based foods, was surprising. In 2021 there were around 450 startups that raised a collective \$4.9B, which was more than double the 2020 total. The jump in investment from 2019 to 2020 was even bigger, and that included the Beyond Meat IPO.

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**

APAC is a large and growing market, with Asia projected to account for over 60% of global consumption by 2030. So, it presents an enormous opportunity for startups bringing innovative and diverse products to market. But APAC is also made up of multiple countries with differing cultures and languages, and most VCs tend to only invest locally, in markets they understand well. So, as alternative proteins are still relatively new, most startups are emerging into markets with a relatively small investor base. There are also few very early stage investors and organised angel groups in the region who are crucial in helping startups bridge the "valley of death" after early friend and family rounds. This will change as the VC market matures, and there are some good dedicated agrifood tech accelerators now operating in the APAC region.

Q

**The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

Yes, it has definitely slowed. I was looking at the 2022 agrifood technology investment figures as we prepared to release the AgFunder 2022 APAC Investment Report, and investment levels are way down on 2021 levels. This is not surprising given global conditions but, from what I'm hearing anecdotally, it seems that VCs in the region are still at the table, and I suspect APAC may perform better than Europe and North America this year, relatively speaking.



# VC SPOTLIGHT

AHIMSA VC



**Siddharth Kothari**

Partner

**Q**

**What are your top 3 favourite APAC startups?**

TiNDLE, Starfield, and Outside.

**Q**

**What do you consider the biggest challenges for APAC startups?**

There seems to be a delay in other nations joining Singapore in granting regulatory approval for commercial sale of cultivated meat. Meat and dairy lobbies in many APAC countries are still fighting the alt protein sector. This, along with the challenge of price parity (which will only come with scale), is slowing down several alt protein startups. While taste is king, price is queen in the alt protein sector. APAC consumers tend to be more price-sensitive than in the Western world.

**Q**

**Top three things you look for in a startup when investing?**

1. It is a cliché that the founders are the most important part of an investment, but I cannot turn up the volume on that enough, especially in early stage startups.
2. Planning to dominate a niche segment initially is fine but, eventually, the startup should be able to cater to a large TAM (total addressable market).
3. A startup is like a child, and it takes a village to raise a child. Thus, value-add deal leads and smart money co-investors are important to have on board.

**Q**

**Top three things you look for in a founder?**

I look for founders that are smart, energetic and honest. If they don't have the third quality then just the first two can do more harm than good for stakeholders!

Founders should be passionate about solving a problem and not just scratching an itch. It helps if they think big and are in the game for more than just making money. Although PHDs can make great founders too: Poor, Hungry, and Driven.

**Q**

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

It is business as usual for me. Winston Churchill famously said, "Never let a good crisis go to waste." Some of the best startups were born during unfavorable macro environments. AirBnB, for example, started during the 2008 economic crash, but still grew to become amongst the greatest startup success stories. Visionary entrepreneurs with grit build for the long haul, including extended periods of tailwinds and headwinds. Fragile competitors often die during tough times so the startups that survive are better off with more market share once the tide turns.

Q

**What do you consider the biggest wins of 2022 for the industry/region?**

UPSIDE Foods' \$400m Series C fund raise, in April 2022, was amongst the largest rounds in the industry to date. It made UPSIDE Foods the second cell-based meat unicorn after Eat Just. Heavyweights like Temasek, SoftBank and Bill Gates participated. Tyson Foods (the world's second-largest processor and marketer of chicken, beef, and pork) also invested, which is a big win for alt protein.

New Zealand unveiling plans for a Cow Flatulence Tax to combat methane emissions, like several countries in the EU, is another win for alt protein in APAC.

Q

**Which do you think are the most exciting countries/geographies to watch? Why?**

Historically, most APAC funding has been going to countries like Singapore, China, Australia and Korea. But dozens of talented founders are building promising startups in India, Indonesia and other large Southeast Asian markets. These startups, along with bodies like GFI, are helping the mass population in these markets understand the benefits of plant-based products for animals, health, and the planet. As consumer education and interest levels grow, startups creating local flavors and affordable options will succeed in attracting investment and scaling.

Q

**What has been the biggest surprise of the past three years in the industry?**

Singapore granting regulatory approval for the commercial sale of cultivated meat in 2020 was a great win. The process reportedly took over two years, leading to the approval by Singapore Food Agency in late November 2020. This event has inspired dozens of cellular agri-tech startups. Hopefully other governments will follow Singapore's lead soon.

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**

Large alt protein companies like Beyond Meat and Oatly have come from the West. There are yet to be unicorns like Impossible Foods and Perfect Day spring out of APAC. It is well-known that APAC is the world's largest protein market with over 40% of global meat and over 70% of seafood consumption. Still, less than 20% of dollars invested in alt protein goes to APAC startups. Once a couple of big successes emerge from here then the funding floodgates will open. APAC should become the largest market for alt protein in the next few years.

Q

**The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

VC investments across all sectors are down by almost 30% YoY so far. Alt protein funding is down, too, but only by around 10% YoY. Almost \$2b has been invested in alt protein globally during the first half of 2022. However, the numbers for APAC startups specifically are looking great. Estimates for the region's alt protein funding in 2022 up to now are around \$400m. That already beats the approximately \$300m raised by APAC startups in all of 2021. Let's hope we set a new record and exceed \$500m in 2022.



# VC SPOTLIGHT

## BETTER BITE VENTURES



**Michal Klar**  
Founding Partner

Q

**What are your top 3 favourite APAC startups?**

It is like asking to pick a favourite child, we love them all! :) I can offer some of my favourite APAC startup themes instead: products adjusted to local tastes and cuisines and taking advantage of the region's biotech infrastructure and talent.

Q

**What do you consider the biggest challenges for APAC startups?**

Access to enough capital to drive growth is still challenging. APAC accounts for over 40% of global meat consumption and over 70% of seafood, but only <20% of global alt protein investments are landing in the region. That's the gap we and other investors are trying to close.

Q

**Top three things you look for in a startup when investing?**

Strong, committed founding team  
Large market = large impact  
Scalable technology

Q

**Top three things you look for in a founder?**

Persistent - startup journey is full of obstacles  
Relentlessly resourceful - execution is key  
Persuasive and inspiring - to attract talent, customers and investors

Q

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

It has not changed our investment strategy but made us realise the urgency of food system transformation and put food security, which has already been a strong theme in Asia, even more front and centre for everyone.

Q

**What do you consider the biggest wins of 2022 for the industry/region?**

While the funding gap I mentioned is still there, it has started to close - from 6% of invested dollars going to APAC in 2021, to nearly 20% this year so far.

Singapore continued to establish itself as the regional, even global, hub for alt protein - it has now approved cultivated meat products and production facility (still the only country in the world), precision fermentation dairy ingredients and most recently 'air protein'. No surprise that many new companies are being started here and cell ag startups from around the world are planning their product launches in Singapore.

It is also great to see the industry self-organising with the launch of the APAC Society for Cellular Agriculture earlier this year.



Q

**Which do you think are the most exciting countries/geographies to watch? Why?**

Singapore - APAC's leading alt protein hub is getting stronger and stronger each year, with a supportive government, access to capital, a talent pool, and a small but affluent and progressive consumer base.

Emerging markets in South East Asia - as more and more people join the middle class, they are starting to think more about sustainable and healthy consumption, which will drive the alt protein boom in Indonesia, Philippines, Malaysia, Thailand and other SEA markets,

South Korea - it is starting to rival Singapore in the cultivated meat/seafood space, with numerous startups launching and attracting funding, and large Korean conglomerates getting involved; my recent visit to Seoul was eye-opening!

India - soon to be the most populous country in the world with emerging modern urban consumers keen to try new products and explore a more sustainable lifestyle.

China - despite many challenges, from the pandemic and lockdown impact to low consumer acceptance, it is still the largest market in the region and the most important from an impact perspective.

Q

**What has been the biggest surprise of the past three years in the industry?**

Not really a huge surprise, but I love how many talented founders launched their alt protein companies in the region. When I started in this industry/region a few years ago, there were only a handful of startups in APAC, now there are literally hundreds!

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**



I may sound like a broken record, but it is still mostly about access to capital - there are fewer dedicated food tech and alt protein funds in APAC compared to the US and Europe, and generalist VC funds are only starting to explore this sector. Also, since consumer adoption is still in the early days, sales ramp-up may take longer than in more developed markets.

Q

**The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

Venture funding is down across all sectors and regions, and alt protein has not been spared. This definitely is impacting the industry. We have seen some of the later stage rounds being reduced in size or postponed. Many founders started to conserve cash more in anticipation of the 'funding winter'.

Having said that, new, exciting startups are still being launched across APAC, and dedicated investors are here to support them with seed capital. We take a long-term view on the alt protein sector and are happy to work with the best entrepreneurs building transformational companies. With the growing impact of climate change and food security issues, it has never been more important than now.

# VC SPOTLIGHT

## BIG IDEA VENTURES



**Andrew D. Ive**  
Founder & General Managing  
Partner

### Q What are your top 3 favourite APAC startups?

We have a global presence with offices in New York, Singapore and Paris, and have invested in more than 100 food startups globally. Given the number of great companies we have met, engaged with and invested in across the whole of Asia, it is impossible to choose our top three. Some of our Asia-based portfolio include Shiok Meats, Fisherloo, Meatless Kingdom, Karana, Phyxx44 Labs, Pullulo, Phuture Foods and others.

### Q What do you consider the biggest challenges for APAC startups?

A few challenges for APAC Startups:  
1) The Investor Ecosystem:

The Investor community focused on startups and seed stage companies does not seem to be as mature versus other regions, such as the United States and Europe. This is surprising as there are many great companies coming through at the seed stage in APAC, and there are good opportunities for beneficial valuations and wealth creation.

#### 2) Scale Up Infrastructure

Many of the younger, most innovative companies coming through in APAC will need access to infrastructure which allows them to scale. This includes contract manufacturers and distributors. This immaturity of infrastructure is not limited to APAC and is apparent globally. It's a significant challenge and a significant opportunity for wealth creation in the long run.

#### 3) Developing the Startup Ecosystem

There is an opportunity to bring together the key players who can support startups and help them to succeed. Corporations, business people/mentors, academia, the government and others. We have been heavily involved in supporting the development of this ecosystem in Singapore. The challenge is to do this in other places. We'd like to help.

Q

### Top three things you look for in a startup when investing?

A big idea. Something that has the potential to benefit us globally. A vision which makes me suck in my breath and the hairs on my arm stand on end. A company solving or helping to solve a significant challenge. A great team which won't quit.

Q

### What do you consider the biggest wins of 2022 for the industry/region?

Bringing together great partners across alternative protein categories who have the capabilities to support true innovators. We helped to build a great global ecosystem of entrepreneurs and corporate partners. For example, there is a challenge with scaling alternative protein. Innovators are finding it tough to go beyond tabletop production. We partnered with Bühler to solve that challenge and support companies moving to thousands, if not millions, of tonnes of

production. Innovative companies have also had a tough time bringing true innovations to consumers that have the taste, texture and the succulence those consumers expect. We partnered with Givaudan, AAK and Avril to bring the right taste and fat to these products. One of the biggest wins has been to build a value chain of partners, an innovation ecosystem, both in Singapore, Asia and globally. We have always recognized that you need to bring the right partners together with the right entrepreneurs. We began to achieve that in 2020 with the New Protein Fund and have put in place the foundations of an incredible decade ahead.

Q

**Which do you think are the most exciting countries/geographies to watch? Why?**

All of them. We recently launched the Big Idea Food Competition to seek out the most exciting startups across all of Asia. That competition was held in six countries. The only reason why it wasn't held in all countries was because of the Covid constraints in place when we began building the Big Idea Food Competition. Next year, we expect to host it in more countries across Asia. I still recall getting on a Zoom call in one country in Asia, which we asked food startups to attend to talk about Big Idea Ventures and the category. We expected to have 20 people on the call. More than 300 startup founders attended, and it was a full and packed two hour conversation. It could have gone on all night.

Q

**What has been the biggest surprise of the past three years in the industry?**

That those people who were saying it was the most exciting category in the food space a year ago, are looking at a few of the bigger companies in the space, and see them as a reflection of the health or weakness of the overall category. The performance of top companies in any category are, first and foremost, a reflection of the companies themselves. There are amazing innovations coming through in the food industry, the challenge is understanding which are the truly important ones that deserve investment, support and encouragement. We believe having a global view and a global pipeline is the best way to

bring transparency to the true opportunities across the food industry.

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**

The biggest constraints for raising VC funds are investors doing nothing and waiting and seeing. When prices are going up, it's often considered the time to sell your investments. When prices are going down, it's often considered the time to buy. There is always something to do in the market. The investors who win are those who have good data and really understand the market. Over the last twelve months we have been moving towards a buyer's market. We can now invest in great companies and gain more equity in these businesses. It's not the time for investors to sit with their hands in their pockets. It's the time to learn as much as possible about the companies who are looking for investors and, ideally with good data, make smart investments.

Q

**The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

Interestingly, the companies, technologies and innovations we are involved with at Big Idea Ventures are often benefitting significant industries. Alternative protein is impacting the trillion-dollar meat, seafood and dairy industries globally. The upside is enormous and, not only that, the technologies have the potential to be far more sustainable and efficient than the traditional industries. Five years ago, corporations and ultra-high net-worth individuals and family offices were investing in our space. As there is some geo-political instability, forward-thinking governments are considering how these new technologies may give them greater food security. I'm sure we will see some corporations waiting to see if they should invest, while others will see this as a good opportunity to get more for better prices. We are also seeing those governments exploring, investing in and developing their startup ecosystems and looking for new ways to improve their domestic food security.



# VC SPOTLIGHT

## BLACKBIRD VENTURES



**Samantha Wong**  
Partner

**Q** What are your top 3 favourite APAC startups?

Vow, Bardee, Fable

**Q** What do you consider the biggest challenges for APAC startups?

We're a long way from many of the other hubs, so people often forget we're here. Access to capital and talent can be a challenge, but this is changing fast!

**Q** Top three things you look for in a startup when investing?

1. Is this the team's life's work? Why are they uniquely placed to succeed?
2. Is there anything original about this idea? Why will

the mission and strategy magnetise the world's most talented people to come and work for the company?

3. Have they made great velocity of progress?

**Q** Top three things you look for in a founder?

1. Ability to attract great talent
2. Charisma and great story-telling
3. Raw intelligence and rate of learning

**Q** How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?

I just generally assume things will take longer and cost more. So I triple check the budget and build conservative buffers over a founder's conservative buffer.

**Q** What do you consider the biggest wins of 2022 for the industry/region?

The launch of Vow's Factory 1, of course.

**Q** Which do you think are the most exciting countries/geographies to watch? Why?

I don't really pay attention to countries or geographies because Blackbird is only interested in investing in companies that go global from the outset. We have to believe you're creating something the whole world wants, and is good enough to be a winner on a global level.

**Q** What has been the biggest surprise of the past three years in the industry?

Just how fast everything has accelerated, and the amount of capital that has concentrated into the category. I first started investing in this space in 2018, and there were only two companies in APAC in the category (and I invested in both of them). Now, I couldn't even name them all. There has been a Cambrian Explosion of people, ideas and investment since then.

# VC SPOTLIGHT

## BRINC



**Manav Gupta**  
Founder & CEO

Q

**What are your top 3 favourite APAC startups?**

We have a number of exceptional APAC portfolio companies working in the alternative protein space. Teams to watch include Good Food Technologies, which use AROMAX™ - a pork fat made from plants - to improve the mouthfeel of plant-based meat, which means their products have fat that melts while cooking, giving them a juicier texture. Haofood, meanwhile, are the first to have developed plant-based chicken using peanut protein, enabling them to remove the soy-heavy smell of many plant-based meats while retaining juicy mouthfeel. Thirdly, Cellivate Technologies have developed patented nanotechnology to improve the efficiency of growing cells that can be used in alternative protein.

Q

**What do you consider the biggest challenges for APAC startups?**

As in any industry, there are challenges for alternative protein startups across not just Asia but the world. Specifics may differ from country to country. Within APAC, some of the struggles I have seen startups face are around regulatory support, access to scalable manufacturing and highly specialized talent in a fast moving space. That said, there is a positive movement to help overcome these issues. For example, Singapore has provided regulatory approval to sell cultivated meat products to consumers, and Japan's Health Ministry recently announced an investigation into the safety of cultured meat, which is a key step in the regulatory process. While the challenges exist, it's great to see governments working to enable companies and consumers to overcome them. Dedicated manufacturing firms are also getting active to help support companies with product development and scalable manufacturing, and placement agents are helping bring in senior talent from large food corporations or institutional investment groups to join burgeoning startups.

Q

**Top three things you look for in a startup when investing?**

As early stage investors we back the jockey not the horse. Everything comes down to the founder, their management and technical team, and what they have been able to achieve prior to us (usually with limited resources and time). Product is a key consideration, but a strong, passionate founder (who has been able to bring onboard a driven team) is what makes an investment go from intriguing to worthwhile. Second, we look at how secure the technology of the product is. This is a consideration of intellectual property, scalability, cost and production efficiency. Finally, customer retention and market fit, in the form of initial revenue, which translates into long-term loyalty from an active customer base that seeks out a particular brand.

Q

**Top three things you look for in a founder?**

In a founder we look for drive, creativity and the ability to bring together a team / partners / an organization around their idea. Track record until the point at which we got involved, and who they have been able to surround themselves with to help fill any gaps, are other key considerations.

Q

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

Valuations have come down, providing a healthy investment environment. Our commitment to mitigating climate change, developing a sustainable food system and ending animal husbandry has never changed. Often, in times of challenge, innovation flourishes, as new parameters and limitations lead to creative solutions. We will continue to source, support, and provide networking opportunities and funding to game changers, while ensuring they also recognize the importance of giving back and supporting those in need.

Q

**What do you consider the biggest wins of 2022 for the industry/region?**

Companies can now work with regulators to begin the process to bring products to market in parallel to investing in R&D and driving costs down - this is a huge win.

There's also now a wider range of technologies - not just in end-product manufacturing, but also in upstream platform development - as well as more B2B companies appearing to support industry growth. We've already started assessing the applicants for the spring 2023 Food Tech program and look forward to revealing the selected few.

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**

The current environment has made it more difficult for startups to fundraise. As rates rise, investors have other options to generate returns and are allocating less to VC. CB Insights reported that VC funding dropped 55% in Q3 2022 compared to Q3 2021. This represented a 34% drop quarter-over-quarter, the largest quarterly drop in a decade.

With less capital flowing to VCs, funds will be more selective when investing, fewer entrepreneurs will raise, and the valuations will be lower. VCs will prioritize companies that can achieve profitability and cash flows in the near term, rotating away from longer duration, deeptech investments. We, however, encourage deeptech investments in the food tech space, as we see a high possibility of consolidation led by M&A activities by large corporates and secondaries by growing secondary funds, all of which are well positioned to help scale R&D efforts and companies to market.

Q

**The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

Industries are being hit by recession, but food is still seeing reason for optimism. After a banner year in 2021, this year saw more than 360 investment deals totalling more than US\$5 billion in the first half alone. With science and technology always improving - and, equally importantly, the demand for alternative protein across APAC - investing will always be intriguing as long as the right ventures are found. It's important not to forget that developing a better food system is one of the best ways we have to address climate change - the defining topic of our lifetime. Trillions of dollars will be lost, along with livelihoods, if more funds do not flow into this space, and that also represents a significant commercial opportunity.



# VC SPOTLIGHT

## DAO FOODS



**Albert Tseng**  
Co-Founder

Q

**What are your top 3 favourite APAC startups?**

We have 16 companies in our portfolio, so it is very hard for me to choose favorites! They are all so different in terms of technologies, target demographic markets, and styles. We invest in a diversity of founders because we are not foolish enough to believe there is one approach to introducing sustainable alternative proteins to 1.4 billion consumers in China. Often people ask us: “What is the secret to selling alt protein to the Chinese consumer?” and our answer is that there is not “one” Chinese consumer. Our suggestion to founders is to be very specific on your target consumer group, especially at the startup phase.

Having said all that, I will highlight three startups that represent some of that diversity:

70/30 Food Science and Technology creates plant-

and mycelium-based ready meals that enrich human health using fermentation technology. Their initial target market is functional food consumers who are searching for specific macronutrient balance in a convenient ready meal. In order to deliver on their “healthy” brand promise, they have chosen mycelium as a power ingredient in their meals. Dao Foods is excited about the way in which the team is “meeting the consumer where they are” and introducing alt protein not as the lead story, but rather through other more compelling value propositions such as health, convenience and, of course, taste.

Zero Limit is a Shenzhen-based startup that sells stylish plant-based bakery products with a strong local following, and is now building a factory to expand across Guangdong province of 87M people. Early local traction indicates that consumers are eager to adopt lighter versions of traditional baked goods. Dao Foods believes this is a great product category to introduce animal-free products to consumers.

Lohas Foods recently won the Best Product by the Audience at Food & Hotel Asia (FHA) 2022 in the alternative meat and seafood category for both their Reeli’s Lobster Chunks and their Mycelium-Based Plant-Based Cream Cheese Product. The Lohas team of six food scientists in Singapore has a particular focus on texturing techniques to create hyper-realistic seafood and dairy products. This venture is an example of how we hope to engage cross-border innovation for the development of the Chinese marketplace.

Q

**What do you consider the biggest challenges for APAC startups?**

The global COVID pandemic certainly reduced consumer F&B demand over the last couple of years in China and abroad. New product introduction in this environment has been particularly challenging. Startups need capital to grow, and the global economic downturn has made raising capital more challenging as well. That said, we believe that there will be a big rebound opportunity in the near to mid term future, so companies that have good products and are well capitalized have a chance to do really well. In the meantime, we need brave entrepreneurs and investors to be patient, cost-efficient, adaptive and smart to ride out the market challenges.

Q

**Top three things you look for in a startup when investing? Top three things you look for in a founder?**

Adaptability - being successful in alt protein in China will be a marathon, not a sprint. As such, founders and companies need to be able to adapt to changing and challenging environments over longer periods of time.

Consumer and product oriented - no matter whether the company is a B2C CPG company, or a deep tech B2B ingredient company, we look for those who seek to understand how their product will meet the needs of the end consumer. This may seem obvious, but far too often we see startup pitches that do not clearly articulate how their product will sell in the very complex Chinese marketplace.

Impact DNA - while we are, of course, bullish on the long term prospects of the sector, we expect the road to mass adoption of alternative proteins will be a rollercoaster ride. We look for impact-driven entrepreneurs as we believe that it is an extra engine and driving force to power through the ups and downs of startup life.

Q

**Which do you think are the most exciting countries/geographies to watch? Why?**

First and foremost we are impact-driven. Per capita meat and animal protein consumption in China is about half of that in Western countries, yet China as one country consumes 50% of the world's pork, 28% of the world's meat, and 50% of the world's seafood. As animal protein consumption per capita continues to grow to levels seen elsewhere in the world, this could be disastrous in terms of climate, water scarcity, food security, and animal welfare. Diversity of protein needs to happen, and nowhere is there a bigger single opportunity than China, both from an impact and a business point of view. We believe there are exciting startups in China, we just need to help them grow into hero entrepreneurs, to inspire even more talent and capital into the sector.

Q

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

Over the last six months, COVID and associated lockdowns in China have certainly impacted alt protein companies. Everything has become harder, most notably being able to plan and run campaigns to introduce new alt protein products to consumers. That said, companies adapt and continue to be creative to push business forward. It has certainly become more challenging for alt protein startups to raise growth capital. It is at this time that longer term impact oriented investors are most needed. After all, climate change and environmental degradation is not slowing down.

Q

**What do you think are the biggest constraints for raising VC funds for startups in APAC?**

As it relates to China, alternative protein is still a nascent consumer market. In San Francisco or Berlin, restaurants have plant-based sections on their menus, but this is not necessarily the case in Shanghai or Shenzhen. The plant-based or alt protein product category does not yet exist in the mainstream. As Chinese investors are consumers themselves, they do not yet see the consumer adoption of alt protein and, therefore, are interested but are cautious with making investments. On the flip side, international investors understand the potential of alt protein as a business opportunity but do not understand China, and are wary of investing in the new geography. In the long term, we believe that Chinese investors will become the main supporters of Chinese alt protein companies, but, in the interim, we believe there are great opportunities for courageous international impact investors who are patient and are driven by both impact and financial returns.

## VC SPOTLIGHT

### GOOD STARTUP



**Gautam Godhwani**  
Managing Partner

Q

**What are your top 3 favourite APAC startups?**

As the largest market for alternative proteins by 2025, APAC has an especially significant role as the sector evolves. We remain bullish about compelling seafood startups such as Avant Meats, where we have been an early supporter. Green Monday has been an early entrant into the space, and it's compelling to see their approach, which spans both products and services. The announcement by Vow to build one of the largest cultivated meat facilities in the region also signals the increasingly significant role this part of the world will play in the sector.

Q

**What do you consider the biggest challenges for APAC startups?**

Q

**Top three things you look for in a founder?**

It's wonderful to see founders that are deeply committed and highly mission-aligned. In addition, we like to see founders that have a relevant background, whether in a scientific or business-related area. Finally, we look for leadership capabilities. A startup requires founders to be leaders and attract others to their vision and approach, whether they are employees, investors, press, or other stakeholders.

Q

**How has the Ukraine war, supply chain disruption and post-Covid inflation changed funding?**

The war in Ukraine has further highlighted both how fragile our supply chain is, and the extent to which our fates are intertwined. In the face of such uncertainty, we look for companies that demonstrate greater resiliency and flexibility, or those that can fill gaps that are created by the supply chain in the near term.

Q

**What do you consider the biggest wins of 2022 for the industry/region?**

We are seeing both increased levels of funding as



well as innovation in APAC, despite the economic downturn. While APAC has always been a significant region related to the supply chain, companies are now focused on fundamental innovation in cultivated meat, which is particularly interesting. Singapore continues to chart the way forward from a regulatory perspective, which we see continuing in the coming years. GOOD Meat's announcement of Asia's largest cultivated meat production facility in Singapore is a significant case in point. Most compelling is that there is innovation across the different countries in the region, highlighting that this is not a local phenomenon, but one that has much broader implications.

From a global standpoint, U.S. President Joe Biden's backing of cultivated meat shows progress on a regulatory perspective outside of Singapore. The relative environmental impact of alternative proteins has always been a topic of debate. A recent report by BCG and Blue Horizon highlighted that if the industry remains on track to achieve 11% alternative protein share by 2035, we will see a 0.85 gigaton of CO<sub>2</sub>e reduction, which is equivalent to decarbonizing 95% of the aviation industry by 2030. The report also highlighted that investing in alternative proteins has the highest CO<sub>2</sub>e savings per dollar of invested capital of any sector.

**Q Which do you think are the most exciting countries/geographies to watch? Why?**

As the sector develops, we will see countries specialize in areas where they have particular strength. Markets like China and Indonesia will see local companies that cater to their large populations. Areas such as Thailand and India will have an opportunity to become especially significant in the supply chain and manufacturing. Today, Asia consumes over 60% of seafood, China consumes 50% of the world's pork, and India is the largest consumer and producer of dairy. We will see innovation follow where these large markets exist today.

**Q What has been the biggest surprise of the past three years in the industry?**

A decade ago, we saw virtually all funding and innovation for the sector come from the U.S. Now, with Singapore offering the most advanced regulatory pathway for the sector, APAC receiving an increased share of funding, and fundamental innovation coming out of the region, it's clear that APAC has a major role to play. This will continue to shift as APAC becomes the largest market for the sector.

**Q What do you think are the biggest constraints for raising VC funds for startups in APAC?**

APAC startups don't yet have the same access to capital from alternative protein-focused investors compared to startups in more advanced markets, such as North America. As a result, startups here need to be more creative, tapping investors in related sectors such as agri-food, biotechnology and sustainability/climate change, which have demonstrated a strong interest in alternative proteins. Startups that can demonstrate near term commercialization or applicability to a global market also have an advantage.

**Q The funding environment has changed in the last six months, is the industry slowing down globally and in APAC?**

There have been valuation corrections over the last few months. However, these corrections extend beyond alternative proteins. While the growth of the sector has slowed, the sector is still on an upward trajectory overall. During economic downturns, high quality startups attract both capital and talent as investors become more restrictive in their capital deployment, and talent leaves companies forced to downsize or shutter. The industry is evolving to reach its full potential. To do so, it must move beyond the plant-based technology stack and augment its offerings with fermentation and cultivated products. This will propel the next phase of growth and produce a higher level of products to cater to a broader set of consumers. This is healthy for the industry and indicative of the sector moving into a new chapter.



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**4**

# Plant-Based Power

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# PLANT-BASED POWER

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The APAC plant-based meat sector is booming. According to the latest data available from the Good Food Institute's company database, there are over 150 plant-based meat, dairy and seafood startups working in Asia Pacific. This is up from the 135+ we counted last year. Research published by Roots Analysis in September 2022 details how the intellectual property for plant-based meat has grown more than three times over the last decade, jumping from 2,388 in 2012 to 7,126 this year. The great news? More than half of these plant-based IP documents originated from Asia-based companies, versus 18% coming from North America and Europe.

In the US, getting meat eaters to adopt plant-based alternatives has proven a challenge. McDonald's shelved its meat-free McPlant trial during the summer, and Beyond Meat's stock took a 70% dip after the company failed to hit sales projections. The narrative around plant-based meat in the US has become increasingly politicised and polarised, with a great deal of backing from pro-meat lobby groups.

Across Asia Pacific, consumer attitudes to plant-based alternatives vary. In many Asian countries, plant-based meat and dairy are simply not part of the mainstream conversation. This is beginning to shift due to a variety of factors, and particularly with younger consumers, whose heavy social media consumption has made them increasingly concerned about their environmental footprint. Asian consumers tend to see meat consumption as desirable socially (as incomes grow and social mobility increases, meat becomes a status food) but problematic from a health point of view. Meat is associated with heart disease, obesity and high cholesterol.

Singapore is, arguably, the most developed plant-based market in the region, where, at one of the progressive retailers, the current market share of plant-based meat in all meat is around 2%, and closer to 6% in frozen, according to data from Michal Klar, Founding Partner at Better Bite Ventures.





In contrast, Japanese consumers show a strong preference for ‘real’ meat and, in Thailand, Joanna Broomfield, Co-Founder at ROOT The Future, told us that many consumers view alternative proteins as “a ‘healthy’ one-day-a-week or one-meal-a-week thing, but don’t seriously consider that they could be a healthy and complete replacement for animal products”. Scott Green, Founder and Director at Sông Thuân Chay, says that, in Vietnam, “alternative proteins are seen as inferior and more expensive than their animal based counterparts”.

The region’s biggest market, China, has massive potential, and a recent survey from Good Growth on the attitudes of Chinese consumers towards plant-based meat shows that around 60% of Chinese consumers had tried modern plant-based meat products, and almost half of these consumers, mostly omnivores, said that they would eat it again. Also, generally, Chinese consumers were more likely to buy plant-based meat if they saw it as healthy, safe, having a good mouthfeel, cool/trendy and animal-friendly. However, the most recent data shows that, across China, plant-based meat has yet to make significant inroads in terms of sales volume.

Consumers in Asia are open to plant-based foods, they just need to be the right ones, and startups in the region are trying to meet this need with products designed with the local consumer in mind, such as Float Foods’ OnlyEg vegan egg tamagoyaki, Good Food Technologies’ meat-free dumplings, and Green Monday’s OmniPork Luncheon. Plus, big hitters from outside the region are making similar moves, such as Beyond Meat, which launched its plant-based Beyond Dumplings, designed for the Chinese market, into the country in November 2022, while Asian-founded companies such as KARANA are finding distribution success in the US with their whole food jackfruit meat alternative launching at various California restaurants.

Notable launches this year include Thailand’s Let’s Plant Meat, which launched plant-based Larb meatballs, shrimp cutlets, Chiang Mai sausage and fermented pork in August, remarking that it was important to make these “cultural and traditional” foods accessible in a plant-based format. Thai Coconut PCL unveiled its plant-based meatless Choi range, which includes plant-based Asian dumplings, plant-based Asian street appetisers and plant-based Western snacks, in May 2022.



Leading global shrimp producer Thai Union debuted a plant-based shrimp product, OMG Meat shrimp, in August, and Tokyo-based startup Umami United unveiled the country's first vegan egg alternative, made using konjac powder and enzyme fermentation technology, in the same month. Over in Australia, v2food added to its range of plant-based mince, burgers and sausages with chicken tenders, nuggets, and schnitzel for foodservice partners, as well as consumer ready meals. Plus, as of the summer, more than 500 Louisa Coffee shops across Taiwan offer vegan burgers made with Lypid's proprietary vegan oil and water-based PhytoFat. And 2023 looks promising, with Green Monday's planned launch of Plant-based Beef Cut and Tips, Plant-based Chicken Wings and Plant-based Pork Cutlet, made with its OmniNano™ Vegan Fat technology, already on the horizon.

Indonesian pioneer Green Rebel has been making strides in the world's fourth most populous country. In March 2022, the startup debuted its vegan beef, chicken and pork alternatives across Singapore and

announced a \$7 million seed raise. In November, it launched a line of plant-based dairy products, including mayonnaise and Caesar salad dressing, in addition to its cheese, released in 2021.

Production across the region is ramping up; for example, in November 2022, Shandi Global opened what it says is Singapore's "largest" plant-based chicken manufacturing facility, and it is not alone. And, for those startups who need help scaling, Singapore's Protein Innovation Centre, a collaboration between leading food equipment manufacturer Bühler and flavouring specialist Givaudan, offers food tech founders and their teams a one-stop shop to innovate novel plant-based meat foods with dry and wet extrusion technology.

While the plant-based space may be crowded, there are several companies setting themselves apart as the future of plant-based alternatives, and we are here to celebrate some of them.





# CASE STUDY: GROWTHWELL FOODS

## A 30-YEAR FOUNDATION IN ECO-CONSCIOUS PLANT-BASED FOOD PRODUCTION

Growthwell Foods is a spinout of Growth Well Industry, initially founded in Singapore in 1989 and motivated by founder Mr Chou Shih Hsin's commitment to creating a more sustainable future. His son, Justin Chou, inherited his ideals and saw the enormous potential in plant-based foods, so established Growthwell Foods in 2019. Temasek invested in the high-growth plant-based alternative startup as both share the same vision of providing accessible and affordable plant-based alternatives to consumers. Plus, as a Singaporean company, it is making efforts to meaningfully contribute to the '30 by 2030' initiative that underpins the city-state's food systems.

The startup has so far raised \$30 million over two rounds since its inception, finding support in what Chou describes as "impact-focused investors who look at a triple bottom-line of financials, environment, and people." Chou is conscious that great food companies can take decades to build, though Growthwell Foods is certainly moving faster than many, so "patient investors who prioritise impact and quality over quick exits" are key to the company's success.

### Singapore's first fully automated large-scale plant-based production line

Growthwell Foods opened its production facility and innovation centre in the JTC Food Hub in Senoko in November 2021. The facility boasts Singapore's first fully automated large-scale production line for plant-based products, and is capable of producing 4,000 metric tonnes of plant-based protein alternative products per year. The company is one of the first



*EPIC'C™ - plant-based milk made with chickpeas*

SMEs in Singapore to use High Moisture Extrusion technology in its production facility, which allows it to replicate meat-like textures within its products without additional additives. The manufacturing facility is also Halal-certified, allowing Growthwell Foods to meet the needs of even more consumers with its products.

Manuel A. Bossi, Group CEO of Growthwell Foods, explains that the innovation centre also allows Growthwell Foods the space to explore other alternative protein sources, and different types of





*HAPPIEE!™ plant-based seafood and meat alternatives*

products: “We are always looking to improve our current offerings as well as adding more types of plant-based alternatives to our portfolio. With more than 30 years of industry experience to draw upon, we have the capability and know-how to support this kind of growth.”

Growthwell Foods’ homegrown plant-based brand, HAPPIEE!™, features alternatives to conventional fish, seafood and chicken products manufactured at its R&D centre in Senoko. The products are made with konjac and non-GMO soy, no added preservatives, no trans fat, and no added alliums. To date, its Fishiee Sticks and Chickiee Popcorn are its bestsellers, and its Fishiee Patty was recently voted Best Vegan Burger in 2022 in Asia Pacific by consumers on the abillion platform, proving that

Launched only in early 2022, HAPPIEE!™ can already be found at **144** retail stores across Singapore and Malaysia. In addition, the brand has partnered with **72** restaurants and food service outlets to expand their plant-based offerings to customers

its realistic texture and authentic taste resonate with consumers.

Alongside plant-based meats and seafood, Growthwell Foods has expanded its portfolio with the EPIC'C™ brand, which features plant-based milk made with its patented 90% chickpea protein isolate. Several variants of EPIC'C™ chickpea milk are scheduled for launch in retail outlets in 2023, with plans for expansion into other non-dairy categories in the pipeline. As Bossi explains: "Chickpeas are not only a complete protein, we chose to use them because it is also a highly sustainable crop, being able to adapt to drought and heat stress and even replenish topsoil by bringing nitrogen back to the soil." The 90% chickpea protein isolate is neutral in colour and taste, meaning a limited need for flavour masking and colouring, it has superior solubility and emulsifying properties and is stable under UHT, it is highly functional and versatile in application, and is especially effective in applications that require strong emulsion stability, strong texture, and high protein concentration, such as protein bars and hard cheese. Growthwell Foods' resulting chickpea milk is made from non-GMO chickpea protein, low in sugar, free of cholesterol and trans fat, and is lactose and gluten-free.

## Growth planning for the future

Growthwell Foods has a portfolio of companies it has backed alongside its own endeavours in alternative proteins, including Israeli startup ChickP, as Bossi explains: "We believe in a strategic mix of organic and inorganic growth, especially when it comes to launching and expanding in new markets. Thus, we invested in a couple of companies which have strong connections locally and provide us either a commercial route to market, or in-market manufacturing capabilities. We also look at acquiring stakes in game-changing tech companies upstream with whom we can collaborate to turn their tech into a finished product, which helps realise their impact on consumers in the most direct way."

The startup has plans to raise further funding as it expands its international reach. Bossi explains that this may be a more complex task as the alternative

protein landscape changes, but not insurmountable: "With our extremely supportive existing investors and the emergence of more environmentally-conscious investors, we do not see insurmountable challenges in securing funding. However, private market valuations are often tied to the public market, and the downside volatility in the public markets which we have observed in recent months will certainly pose as headwinds to fundraising in general." As a game-changing tech company itself, we're sure Growthwell Foods has a bright future as one of the region's plant-based leaders.

**We also look at acquiring stakes in game-changing tech companies upstream with whom we can collaborate to turn their tech into a finished product, which helps realise their impact on consumers in the most direct way.**

*Manuel A. Bossi, Group CEO,  
Growthwell Foods*



# CASE STUDY: PLANT SIFU™

## DISRUPTING THE MEAT MARKET WITH CONVENIENT, AFFORDABLE AND DELICIOUS CHINESE PLANT-BASED CUISINE

Plant Sifu™, a plant-based food brand under Hong Kong startup Good Food Technologies (GFT), was founded in 2020 by two foodie technologists, Dr. Andrew Leung and Joshua Ng, who believe that the power of tasty food and technology could change the world. Their mission: to create a plant-based brand that connects to their Asian roots, but which does not compromise on taste and contributes to global food sustainability.

They started with pork, the most-consumed animal protein in Asia. More specifically, they targeted shaomai, a popular dim sum dish, analysing many conventional and plant-based options to define what makes for great taste, aroma, texture, appearance and cook-ability, then began developing a plant-based alternative that met these criteria. This ultimately led to the creation of GFT's signature technology, AROMAX™, essentially pork fat made from konjac jelly, designed to enhance the plant-based pork's structural integrity, lock in oils, emit fragrant aroma, and turn translucent when steamed, just like pork fat. As a bonus, it also has 90% less fat when compared to lard.

### Localisation as a key rollout strategy

GFT targeted shaomai because, as Ng explains, “dim sum is a vital part of Chinese food culture, well-loved locally and internationally,” and creating a product for local tastes was a major part of its development strategy. Ng continues: “Alternative proteins have taken the world by storm, but the products developed by the West are designed for their local dietary and culinary preferences – be it the choice of animal protein or cooking approach. There are many

subtle differences vs. the Asian market. For example, many Asian cooking methods are water-based, like steaming and simmering, for which the Western brands may not be suitable.”

In terms of rollout, GFT's approach is to “build credibility then volume”. To date, the brand has collaborated with several high-profile Chinese restaurants in Hong Kong, including two with Michelin stars, to prove the credentials of its plant-based pork with the best in the industry. The company has also partnered with mass market retailers, including 7-11 locally, securing a landmark deal to support 7-11's first own-brand plant-based campaign in 2021. The partnership was “incredibly rewarding and humbling”, Leung explains, and led to many learnings: “Given the size of this deal, we learnt the practical limits of our pilot production capacity and identified bottlenecks for further scaling, which helped with our expansion planning. We also learnt the ins and outs of product customisation, for example managing meat, vegetable, carbs, and water content to achieve target taste profile and cost control – as well as understanding the cooking and flavouring limitations of our own plant-based meat product.”



*Plant Sifu™ plant-based shaomai and dumplings for retail*





*"Chinese.Plant-based.Reimagined" menu collaboration with Hyatt Regency Hong Kong*

## Affordability as a means to supporting consumers

GFT unveiled its consumer-facing products under the Plant Sifu™ brand in April of this year, offering tasty and affordable plant-based Chinese dim sum products in retail for easy home consumption. Its pricing is another key factor in its growth strategy, having started with the goal of being at parity with animal meat, with the long-term aim of being always more affordable than animal meat, thus removing barriers to entry for cost-conscious consumers. Ng explains: "Fundamentally, plant-based foods are created to achieve significant resource and cost savings, which would have been required for equivalent animal-based products, while delivering the same or better consumer experience. With inflationary pressure and rising food prices, consumers are more price sensitive and less willing to pay a premium for plant-based products. However, plant-based products that are more affordable and highly accessible will have a great opportunity to capture market share."

An oversubscribed HK\$12 million (approximately US\$1.5 million) seed round in March 2022 helped GFT with its rollout so far, and it has a clear growth plan for expansion. It intends to expand into Mainland China early next year, which it has made its focus since, as Ng explains, "China is a significant market for F&B consumption given its population size, growing purchasing power and willingness to try new products." It won't necessarily be an easy ride, as Ng continues, "Given China's strong culinary culture and wide applications in food, we believe Chinese consumers have significantly lower tolerance for compromises on taste and texture. Mass

market consumers are also more price-sensitive. Both product experience and affordability are key challenges to be addressed. Another challenge is branding – how to differentiate from legacy vegetarian brands and new local upstart brands. Marketing messages on sustainability and animal welfare that work in the West will not work in China." However, GFT's strategy of building credibility before volume is key here, as the brand "strives to change consumer perception starting with good taste, one bite at a time."

After China, GFT is aiming for international expansion in Q3 2023, potentially supported by seed extension fundraising in the first half of the year. And it won't stop with shaomai. As Leung explains, its product development priority is "to address Chinese culinary needs", and, after pork, GFT will go after chicken and seafood as the next most-consumed proteins, each with their own unique challenges, including texture, flavour, and nutrients, focusing on classic bestsellers and family favourites. It is a strategy that's worked so far, and we've no doubt will see the brand's tasty plant-based Chinese foods enjoyed across the globe.



**"Plant-based products that are more affordable and highly accessible will have a great opportunity to capture market share."**

*Joshua Ng, co-founder,  
Good Food Technologies*

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# Cultivated Protein

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# CULTIVATED PROTEIN

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Of all the sectors within Asia Pacific's alternative protein industry, the cultivated sector has seen the most activity in the past year. Across the region, it has been a year of firsts. We've seen startups unveil their latest technology, in some cases industry or country firsts, like CellMEAT's dodko shrimp, Umami Meats' fish balls, fishcakes and filets, Meatiply's smoked duck breast, Joes Future Food's belly pork, and Magic Valley's lamb meat.

Funding has slowed down across the industry in general, and this remains true within the cultivated sector, but there have still been several notable cash injections into cellular agriculture startups, such as CellX's \$10.6 million Series A and SPACE F's \$15 million government grant, both in May 2022, Avant's \$10.8 million Series A in July 2022, and Vow's record-breaking \$49.2 Series A in mid-November

(the largest on record globally), among others.

There have been a few strategic partnerships announced through the past year, marking startups joining forces with big firms to make use of existing infrastructure, distribution networks, technology and funds to accelerate cell-based commercialisation. Shiok Meats' subsidiary Gaia Foods and Swiss-based deep food tech Mirai Foods announced their strategic partnership to develop cultivated beef in August 2022, after Shiok Meats signed a memorandum of understanding with Vietnam's Minh Phu Seafood to develop a combined R&D facility to help bring cultivated seafood to Asia in July 2022, and CJ CheilJedang, one of Asia's largest food and biotech companies, announced its partnership with KCell Biosciences, a startup focused on cell culture media, in March 2022.





Building on its success in Singapore after becoming the first company to earn regulatory approval for cultivated meat in the city-state, Eat Just's GOOD Meat broke ground on the largest cultivated meat factory in Asia in June 2022. The target launch date is set for early 2023 and, according to Eat Just, the facility will be able to produce tens of thousands of pounds of meat. Alongside this, several companies across the region are scaling, building infrastructure to support their journey to commercialisation, such as Australian company Vow, which unveiled Factory 1, its NSW-based factory capable of producing 30 tons of cultivated meat per year, in October 2022.

Support for the industry is at an all-time high, too, and there is a sense that the region is moving closer to wider regulatory approvals. This year, China's five-year agricultural plan includes cultivated meat and 'future food' for the first time, and China held its first Cellular Agriculture Forum in April, while the Japanese government announced its plans to pull together a team of experts to analyse the safety of cultivated meat in June, which experts see as a precursor to implementing a regulatory framework for future commercial product approvals.

Singapore continues to be the regional leader on the cultivated food front. While the US FDA granted Californian cultivated meat company UPSIDE Foods GRAS status in mid-November 2022, Singapore

remains the only government in the world to have approved cultivated meat for sale (Eat Just's GOOD Meat chicken back in December 2020), and looks set to grant other players regulatory approval soon. As an example, Australia's Vow says it is confident it will be able to sell and serve its first product, dubbed Morsel, a cell-based quail meat, in Singapore before the year's end.

Dutch startup Meatable signed an exclusive agreement with Singaporean approved contract cultivated meat manufacturer ESCO Aster to bring its cultivated pork to the city-state by early 2023, and is set to build the world's first Future of Meat innovation centre for cruelty-free meat, in partnership with Asia's first plant-based butcher, Love Handle. The innovation centre will develop hybrid products, containing a combination of cultivated meat and plant-based materials. Meatable will invest over \$60 million and employ more than 50 people over the next five years in Singapore. The partnership was brought together by the Singapore Economic Development Board, a government agency supporting the alternative protein sectors through innovation. Another Dutch cultivated meat startup, pioneer Mosa Meat, signed a similar agreement with ESCO Aster at the same time.

It's an exciting time to be part of such a world-changing space, and we can't wait to see what 2023 brings.



# CASE STUDY: CELLMEAT

## 100% FOCUSED ON WINNING THE CELL-BASED RACE IN SOUTH KOREA

Founded in March 2019, CellMEAT is a South Korean force to be reckoned with. In less than 3.5 years, the startup has raised several successful funding rounds totalling \$13.6 million, and developed the world's first cultivated Dodko shrimp and a game changing FBS-free cell culture medium. It has achieved these goals significantly faster, and with significantly less cash, than equivalent startups in the US and Europe. So what's their secret?

### Food tech as medicine

CellMEAT's journey began when two of its founders, Heejung Kim and Giljun Park, realised that food tech could be the way to tackle their family members' health issues, since food is so closely linked with physiology. Having tried organic and clean diets, but still facing issues due to the hormones and antibiotics used in conventional animal agriculture, Kim and Park, along with the other founders Changkyoung Choi and Kyungbon Lee, decided to focus their efforts on what they say is the future of food: cellular agriculture.

From the beginning, CellMEAT's founders have considered exactly what consumers are looking for in terms of health and sustainability, something which has become easier in the wake of the coronavirus pandemic. In fact, when building their business case for venture capital, one of the company's main considerations was the market value driven by consumers who care about their health, and that of the environment, and how CellMEAT could engage with and grow this market with its products. Kim explains: "This was not something that could be measured as a number, it was hard to explain, but our VC understood those values." It's this consumer-focused approach that sets CellMEAT apart from some other companies in the same field.



*Giljun Park*



*Heejung Kim*





*CellMEAT's Dodko shrimp prototype*

## Channeling local support into groundbreaking R&D

In the three years since its journey began, CellMEAT has raised more than \$14 million across three funding rounds, and is working towards its Series B. Its Series A, in April of this year, netted the startup \$8.1 million, and is allowing the team to ramp up its R&D and production towards eventual commercialisation. Most of the startup's investors to date are South Korean, or from the APAC region, and have been very supportive of CellMEAT's vision, providing guidance and networking whilst allowing the startup the freedom to grow.

CellMEAT unveiled its FBS-free cell culture medium in December 2021. At the time, Park commented: "The meaning of our serum-free cell-culture method exclusively for cultivated meat is distinct from simply using it to maintain cell viability. Our research shows that CellMEAT can grow cells faster (about 250 per cent) when compared with the currently commercially available serum-free culture medium or traditional cell-culture medium using fetal bovine serum." As well as speeding up production, and responding to what the startup sees as a consumer need for a replacement for controversial fetal bovine serum, CellMEAT's new cell culture medium could also help it bring its cost of production down, allowing it to reach a purchase price of "less than \$40 per kilogram".

In the same month, the startup announced a world first: the successful development of a cultivated Dokdo shrimp. It's made with only edible and natural sources and needs no supplementary additives to taste and smell like the real thing, because it IS the real thing. Alongside the Dodko shrimp, CellMEAT is working on several other cultivated meat types, but wanted to focus on something that "nobody else was working on" for its first official product, to avoid competition and market saturation. Plus, as consumers themselves, CellMEAT's founders love shrimp, but take issue with the way in which it is farmed, so a cell-based replacement seemed like a natural fit.

**CellMEAT's cell culture medium can grow cells 250% faster than other serum-free culture media or traditional cell-culture media using fetal bovine serum**



## Levelling up

CellMEAT then set about working with Chef Kyong-Ho Lee at Seoul restaurant Sigolo, to focus on bringing the Dodko shrimp to market. When the founders first contacted Chef Lee, they were surprised by his openness to work with a product type that is still so nascent. His willingness to embrace change came from his realisation that, upon going to the fish market to purchase what he needed for the restaurant each day, the type of fish and molluscae available were changing. The options available came from what would previously have been much warmer oceans, so it became clear to him that global warming was a real issue.

CellMEAT worked with Chef Lee to refine the shrimp's texture and flavour. At first, Chef Lee expected that CellMEAT's shrimp would taste exactly the same as conventional shrimp but, because it is grown without the skin and innards, this isn't the case. And, while these are technically waste products, they also help to impart significant flavour. Over the course of six months, the team worked to amend its prototype according to Chef Lee's feedback, learning from the different ways in which he prepared and cooked the shrimp. Together, they developed six dishes to be presented at Sigolo during a sampling event. But how did consumers respond?

"Wonderfully," Kim comments, "Some didn't even recognise that it was cultivated shrimp." The event was a resounding success and, as Kim shares, Chef Lee helped to "level up" their shrimp.

## Setting a goal and racing towards it

The only obstacle in place at the moment is approval from regulatory bodies, but this is something that CellMEAT is working towards, at pace, taking regular meetings with The South Korea Ministry of Food and Drug Safety in the hope of commercialising within the next twelve months. In fact, the startup is planning to build a 3,600 sq ft production facility in Seoul early next year, that will have an annual mass production capacity of around 220,500lb, and which Park claims will "cause a global sensation in terms of production efficiency."

**We set a goal and raced towards it.**

*Giljun Park, Co-founder  
CellMEAT*

When questioned on how CellMEAT has made so much progress, so quickly, Park commented that, as a team of 26 people, they "set a goal and raced towards it". CellMEAT is divided into four units, working on cell development, media development, scaffolding, and scale-up. The secret, according to Kim, is clear communication: "For example, during early stage R&D, CellMEAT decided to prioritise the production of our own culture solution, which is the most important technology in the cultured meat industry. The first thing that we focused on was to hire a group of skilled, professional researchers to develop new technologies. The leadership's main purpose was to help the team concentrate on a single objective, keep them motivated, and make sure that every single one of them understood our goal. Instead of regular meetings, we prefer spontaneous discussion in which everyone can participate. Eventually, these strategies made it possible for us to quickly develop the core technologies required for our future projects as a single team." This, combined with the desire to succeed, and fast, from everyone in CellMEAT, is what sets the startup apart as a market leader.

# CASE STUDY: UMAMI MEATS

## AIMING TO BE THE “INTEL INSIDE” OF THE CULTIVATED INDUSTRY

Singapore-based cultivated seafood startup Umami Meats’ founder and CEO Mihir Pershad began his career developing solutions to help aquaculture farms manage feed and disease challenges. After three years, he felt that a more ambitious approach was needed to break out of what he calls the evolutionary “arms race” that traditional animal agriculture is fighting against pathogens, so decided to start Umami Meats to enable this step change in food production.

Umami Meats is developing an “operating system” for cultivated seafood, that enables traditional seafood producers and food manufacturers to craft cultivated fish at scale under their owned, local brands. Its platform is built upon multiple core technologies, including its novel single-stem cell approach to producing muscle and fat, a low-cost, plant-based growth media, and machine learning tools that accelerate process optimisation and product application development.

“We recognised that industry maturity would only come with significant scale and that complete solutions enabling that scale are missing today. To produce 50% more seafood by 2050, we’ll need not just the advancements of new industry innovators but also the resources, distribution networks, and scale of the traditional industry. Our goal at Umami Meats is to be the “Intel Inside” of the cultivated industry, creating the operating system and firmware needed for the industry to scale efficiently and to produce delicious, nutritious seafood,” says Pershad. Umami Meats’ growth serum is made from food crop side streams and marine algae, so is highly nutritious and can be scaled up with its production requirements. Most importantly, it is low-cost: “Our supplement can be produced at less than \$1 per litre at pilot scale compared to \$1000 per litre for FBS, is animal-component free, and supports growth of many fish cell lines from a variety of species.”



*Umami Meats’ structured hybrid cultivated fish fillet*

## Focusing on food that is familiar and culturally important

In August of this year, Umami Meats debuted the world’s first cultivated fish ball laksa, a dish that is closely tied with Singapore’s food culture. Pershad explains the product choice: “We believe it is incredibly important to lead with familiarity and demonstrate that we can keep culinary heritage alive while also improving the sustainability of our food system. ‘New’ can often be scary for many people, and we think focusing on food that is familiar and culturally important will help to make cultivated products more acceptable and interesting to consumers. That’s why unagi (grilled Japanese eel) is one of our first commercial targets.” More recently, the startup



*Eel sushi under development by Umami Meats*

unveiled a battered whitefish fillet, its first structured prototype, made in partnership with global food ingredients provider Ingredion. The fish fillet is the first example of Umami Meats' approach to leveraging its technology platform to enable industry-wide adoption of cultivated seafood. "We are focused on optimising and scaling the production technology stack and working with experienced food production partners to develop market-ready applications that are delicious, nutritious, and localised for a particular geography and consumer segment."

## Scaling to commercialisation

Umami Meats is in the early scale-up phase of its journey and is moving rapidly towards its first commercial launch, currently in the pipeline for 2024 subject to regulatory approval, which the startup is pursuing. Having secured \$2.4 million pre-seed funding in late 2021, Umami Meats is raising a seed round and actively looking to speak with strategic and VC investors. The startup's diversity of approach will likely be key to its success, and its priority for early commercial sales is fine dining and mid-tier "HoReCa", due to the sector's naturally smaller volumes, since its production capacities may initially be relatively limited and production costs will be higher. Pershad expects that we will then see "cultivated hybrid products reach HoReCa more broadly, including QSR, before the volume scales up enough to serve grocery and retail segments. We intend to support the launch of a global range of hybrid cultivated products while continuing to

develop the breakthrough science that will enable us to do the same with 100% cultivated products in just a few years." Let's hope he's correct.

**Our supplement can be produced at less than \$1 per litre at pilot scale compared to \$1,000 per litre for FBS.**

*Mihir Pershad, Founder & CEO,  
Umami Meats*





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**6**

# Fermentation: Technology Spotlight

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# FERMENTATION: TECHNOLOGY SPOTLIGHT

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Asia's dairy sector is booming. Data from Statista values the region's Dairy Products & Eggs segment at \$450.40 billion in 2022, and expects the market to grow annually by 7.61% (CAGR 2022-2027). According to data from the Dairy Association of China, 2021 saw the per capita consumption of milk in China rise to 14.4kg. Data from GlobalTrade shows that India is the largest whole fresh milk consuming country in Asia, accounting for 54% of total volume. In fact, the region is now the world's largest consumer of milk and milk products, accounting for 39% of global consumption. Despite this, Asia Pacific has very few startups focused on dairy alternatives.

The Good Food Institute (GFI) defines precision fermentation technology as such: "precision fermentation uses microbial hosts as "cell factories"

for producing specific functional ingredients." Further precision fermentation ingredients such as enzymes, flavoring agents, vitamins, natural pigments and fats "can improve sensory characteristics and functional attributes of plant-based products or cultivated meat." Examples include The Every Company's egg proteins, Impossible Foods' heme protein and Perfect Day's dairy proteins.

California-based Perfect Day is pioneering animal-free whey protein created through precision fermentation, and is collaborating with companies across the world to bring animal-free dairy products to markets including Asia Pacific, to help satisfy the region's thirst for dairy products, from ice cream to yoghurt to milk.



# CASE STUDY: PERFECT DAY

## POWERING KINDER, GREENER ANIMAL-FREE DAIRY ACROSS THE GLOBE

Founded in 2014, Perfect Day makes bio-identical whey protein, without using any animals, through its innovative precision fermentation process. It was the first company globally to commercialise an animal-free, but molecularly identical, protein made with this kinder, greener process, and products made with Perfect Day's animal-free whey protein can be found in six categories across three countries from its partners and consumer brands business The Urgent Company.

Products made with precision fermentation have been tackling challenges in our food system for decades, from health and wellness to animal welfare and foods, and Perfect Day harnessed this “foundational work” to help shape the future of food and create a high-value animal-free, identical protein. In the first half of 2022, the company produced more animal-free whey protein than it did in all of 2021, claiming that it has “unlocked the capacity to produce thousands of metric tons” through its four commercial-scale facilities around the world. Alongside its first product, Perfect Day has other products in the pipeline, says Nicki Briggs, VP, Corporate Communications at Perfect Day. “In addition to the many applications for whey we have on the horizon, our R&D team is also hard at work on using our technology to extend our impact into new animal-free ingredients, including other proteins and lipids in the future.”

### Scaling to meet growing demand

The pace of Perfect Day's growth since launch has been monumental, driving innovation and forcing fast scale up. Briggs elaborates: “I would say our biggest win and stumbling block are two sides of the same coin. It's been such an incredible win

to have overwhelming demand for our kinder, greener protein from major CPG companies and new, passionate entrants around the globe. Our production has grown 500% in the past year to meet this demand. But, that has also created challenges in scaling fast enough to extend our impact as far as possible, as quickly as possible.”

The startup counts celebrities and high-profile industry experts amongst its backers, including the likes of Leonardo DiCaprio and former USDA secretary and UNICEF executive director Ann Veneman. Briggs explains what they have in common: “Our investors and advisors all share one critical component—regardless of if they are a business leader, celebrity, food systems expert, academic, or any of the other incredible subject matter experts we're lucky to count in our community—they are deeply mission-aligned. We are incredibly fortunate to have the advice and support of so many who share our belief in the significant long-term climate and resiliency impacts of building animal-free supply chains through precision fermentation.”

**Perfect Day produced more animal-free whey protein in the first half of 2022 than it did in all of 2021**





*Products made with Perfect Day's animal-free whey protein*

## Asia: a major growth opportunity

Perfect Day was founded in the US, but is also currently present in Singapore and Hong Kong, and sees Asia Pacific as a major growth opportunity. The startup credits the “privilege” of working with great investors from the very start – Horizons Ventures in Hong Kong and Temasek in Singapore – with its success in hitting the ground here running. Working with on-the-ground partners has meant that Perfect Day has been “well informed” about regulations in Hong Kong and Singapore where, as for the US, it worked closely with regulatory agencies well before bringing its products to market.

Its first launch in the region was ice cream, a collaboration with Hong Kong’s Igloo Dessert Bar to launch Ice Age!, made with Perfect Day’s animal-free dairy protein, and this year saw the debut of another brand dubbed TRU NIAGEN® Animal-free Dairy Gelato, a range of eight flavours featuring health-boosting superfood ingredients like goji berries, red date and ginseng. Plus, The Urgent Company, Perfect Day’s consumer-facing subsidiary, brought Coolhaus ice cream to Singapore. Briggs explains the rationale behind this choice: “Everyone loves ice cream, and we saw it as a great entry point to talk about animal-free. In Singapore specifically, the climate is perfect for

ice cream all year around, and consumers are spoilt for choice. The Urgent Company recently acquired Coolhaus ice cream in the US, and we felt that this was a fantastically fun and exciting established brand to convert to animal-free and bring to Singapore. Coolhaus is packed with passion and personality, and its flavours and unique formats (pints, cups, cones and sammies) are impossible not to love. We feel that it’s best for people to have a fun and unexpectedly delicious experience to associate with their first time trying animal-free dairy.”

Sampling is core to Perfect Day’s strategy, which is grounded in the principle that “tasting is believing.” So much of the science and technology behind achieving Perfect Day’s animal-free dairy sounds too good to be true but, once customers taste the products, acceptance and conversion is high. And the startup wants to keep winning with consumers, as Briggs says: “With these foundations laid, Perfect Day plans to develop and market more of our owned brands and partner brands across other product verticals.”

Perfect Day’s most recent launch in Asia is the region’s first animal-free dairy milk, which it hopes



*Coolhaus animal-free ice cream, made with Perfect Day's animal-free whey protein*

will “revolutionise the dairy category in Asia”. Very Dairy, which debuted in Singapore in late November, is made using Perfect Day’s animal-free whey protein, and delivers the same taste, texture, and nutrition as traditional dairy. Very Dairy is lactose free, cholesterol free, hormone free, low in sugar and saturated fat, and rich in protein and calcium, making it more easily tolerated by Asian consumers, due to a higher instance of lactose intolerance in the region.

## nth Bio: Perfect Day’s platform for sharing expertise & technology

In September this year, Perfect day launched its nth Bio business - a spin-off platform that leverages its expertise and technology services for collaboration and hire. Briggs explains: “Our development process took several years and we learned so much along the way. This business allows us to offer those learnings to other companies who want to use our precision fermentation expertise to overcome any challenges they’re facing. Chances are we’ve faced the same.” Perfect Day says nth Bio is the only enterprise biology company in the world offering “end-to-end expertise and services from the earliest stages of molecular development to commercial-scale manufacturing, and the many steps in-between.” It already has its first partner, Onego Bio, Ltd., and the two are working to develop animal-free egg whites using precision fermentation, to meet the growing demand for

eggs with a more ethical and sustainable option. Partnerships such as this will likely be key to Perfect Day’s future growth, as Briggs says: “We are focused on growing through collaboration, because we know we need a future where sustainably-produced products exist up and down the ecosystem—with animal-free dairy existing alongside traditional and plant-based products from sustainable producers.”

Perfect Day believes that sharing technology will be key to a sustainable future, as Briggs explains: “We absolutely believe technology is one critical component in the future of food. But we also know we can’t do it alone. It will take all solutions to reach climate stability with the urgency that we need to act against the climate crisis and at the scale we need to feed the world.”

**We are focused on growing through collaboration.**

*Nicki Briggs, VP,  
Corporate Communications, Perfect Day*



Beyond precision fermentation, other players are using different types of fermentation technology. On the algae front, Singapore's Sophie's Bionutrients and New Zealand's NewFish are working to explore microalgae's potential in the dairy alternative market using microbial fermentation.

Plus, from outside the region, startups such as Aqua Cultured Foods are targeting go-to-market partnerships in the Asian foodservice category with dumplings filled with mycoprotein seafood, also made using microbial fermentation.





# CASE STUDY: AQUA CULTURED FOODS

## THE WOMAN-LED STARTUP PIONEERING MICROBIAL FERMENTATION WHOLE-MUSCLE CUT SEAFOOD ALTERNATIVES

Founded in 2020, Chicago-based startup Aqua Cultured Foods is producing nutrient-rich, sustainable seafood alternatives to feed the world's expanding population without the global environmental problems caused by overfishing. Aqua has developed completely new microbial fermentation methods to deliver the texture, taste, appearance, and nutritional value of conventional seafood, which CEO and Co-Founder Anne Palermo describes as "the holy grail in alt protein". Aqua's whole-muscle cut products are convincing enough even for raw applications like sashimi, nigiri and ceviche.

"Aqua Cultured Foods is unique on two fronts: it's the only company in the fermentation category dedicated to alt-seafood, and the only alt-seafood company using fermentation," explains Palermo. "Fermentation yields a whole, unprocessed, highly nutritious food that retains its naturally occurring fibre, protein, and other micronutrients, which makes it significantly different from other alt proteins."



*Aqua Cultured Foods' sea bass sashimi, developed via fermentation*

Palermo explains that founding Aqua Cultured Foods stemmed from a desire to help feed a growing global

population, but in a sustainable manner: "With the world population expected to increase from seven to ten billion people over the next 30 years, the world needs to increase food production by more than 50%. Upon further research, I discovered that most of this population growth will be in China and Southeast Asia, where approximately 70% of the world's seafood is consumed. In fact, it's the number one protein consumed per capita. So, we're seeing a massive increase in demand for seafood. However, due to climate change and overfishing, 90% of all wild fisheries are categorised as overfished, creating the potential for mass global starvation."

### Scaling to pilot stage, and beyond

Aqua Cultured Foods has raised one funding round to date, and each of its pre-seed investors share certain values, such as concern over sustainably feeding a growing population, and can contribute strategically to the startup based on their relationships, their geographic reach, their industry expertise, or other strengths. In particular, as Palermo explains, Aqua's largest investor to date, Supply Change Capital, "truly understands the challenges faced by female founders, and by women in STEM fields such as food tech, because the fund's founders have walked in the same shoes".

The startup is now actively raising further funding, which will be used to transition from benchtop to pilot stage. Because of the nature of its production methods, and the comparatively low cost of inputs and equipment, Aqua can scale up more affordably than, for example, a cultivated protein company, allowing it to bring products to market sooner



*Aqua Cultured Foods team*

with far less capital. Palermo explains that, when fundraising, the challenge for Aqua has not been raising money, it's been staying mindful of dilution, because its co-founders have been unwilling to cede more equity than necessary. "It's far preferable to be mission-aligned with the partners that join the round, and the strategic value they can offer, than to take on more funding for the sake of numbers or publicity." Palermo anticipates fewer regulatory hurdles for Aqua's fermentation-derived proteins than those faced by cultivated foods, and the startup intends to pursue GRAS status in the US, followed by novel foods status in Europe, with other appropriate certifications to follow as it enters into new markets.

## Responding to Asian consumer needs

Asia is an important region to Aqua Cultured Foods, not least because interest in seafood alternatives is high in the region, and many of its countries are already struggling with meeting seafood demand. "China has already largely depleted fish stocks close to its own shores and is now fishing the line in South America. Population growth is expected to be significant in Asia over the next eight years, plus rising middle classes means even more seafood consumption."

"We are, however, conscious of varying consumer interests. Taste profiles and preferences, and even the species of seafood consumed, vary greatly

across Asian markets. For example, what restaurants and foodservice distributors in Japan may want is different from their counterparts in South Korea or Thailand. We recently developed a filling for dumplings (such as mandu, jiaozi, and gyoza) that is a minced, bulk "shrimp," for our partners to prepare and package according to their preferences."

Aqua Cultured Foods' first commercial launches will be within restaurants and other foodservice verticals such as universities, before eventually rolling out to retail. "In the U.S., 70% of all seafood is consumed in restaurants, so it's the right place to begin making an impact and meet the consumer where they are. Working with restaurants and chefs also adds culinary credibility: the consumer can regard it as an endorsement that the product tastes, feels, and performs like they expect. Down the line, when products appear in retail stores, customers will already have the necessary awareness of the brand and the concept."

**What restaurants and foodservice distributors in Japan may want is different from their counterparts in South Korea or Thailand.**

*Anne Palermo, CEO & Co-Founder,  
Aqua Cultured Foods*

An abstract graphic featuring several overlapping shapes: a large purple circle in the top left, a smaller red circle below it, a large red circle in the center, a teal ring to the right of the red circle, and a large teal pill-shaped oval at the bottom right. A purple diagonal bar runs from the top right towards the bottom right, passing behind the teal pill shape.

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**7**

# Precision Fermentation: Market Spotlight

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# PRECISION FERMENTATION: MARKET SPOTLIGHT

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The global precision fermentation market is estimated to be valued at \$1.6 billion in 2022, and is projected to reach \$36.3 billion by 2030, recording a CAGR of 48.1% in terms of value, marking a major opportunity for such a nascent industry.

In our 2021 report, we noted that there were no precision fermentation companies in the ex-Pacific Asian region, perhaps because many Asian countries do not have long traditions of consuming dairy products. We predicted that this would change, particularly in India, and have been proved correct. Precision fermentation is finally getting a foothold in the region, and startups creating animal-free protein have been making major progress.

From Changing Biotech, China's first precision fermentation dairy startup, which emerged from stealth mode and announced a record-breaking \$22

million Series A round in May 2022, to Thai precision fermentation dairy company MUU Thailand (still in stealth) and Bangalore-based Phyx44, which says it's using precision fermentation to create whey and casein proteins as well as fatty acids found in dairy, and recently announced its \$1.2 million seed round. Australia is home to Change Foods and Eden Brew, while New Zealand has Daisy Labs, and all three continue to pioneer the precision fermentation sector.

In terms of support for the sector, ADM and Asia Sustainable Foods Platform announced the official inauguration of their joint venture company, ScaleUp Bio, in August 2022 in Singapore. It is the first company in Asia to provide contract development and manufacturing organisation services for precision fermentation for food applications, helping startups to scale towards commercialisation.



# CASE STUDY: CHANGE FOODS

## CREATING ANIMAL-FREE DAIRY PRODUCTION, STARTING WITH PIZZA CHEESE

2022 has been a big year for Change Foods. Since last year's report, the animal-free dairy maker raised a \$12 million seed extension round and is currently in the midst of a bridge round, alongside receiving a \$3.1 million grant from the Australian Government to support an existing research partnership with Queensland University of Technology.

### Scaling across the globe

Change Foods has also finished setting up its new Silicon Valley R&D lab and, in October, signed a pre-development agreement with the KEZAD Group based in Abu Dhabi, to build a commercial scale manufacturing facility for animal-free casein, with support from the UAE government. David Bucca, Founder and CEO of Change Foods, calls the choice of location in Abu Dhabi a "great strategic fit", and is excited about the collaboration. "The UAE is looking to attract innovative technology companies and further its food security agenda. We were looking for a comprehensive solution to set up a scaled manufacturing facility that provided a holistic solution for engineering, construction, operations, logistics and distribution, as well as government support. We believe the UAE location will serve as an important export hub to multiple markets in the region and globally as we grow."

Change Foods has significantly grown its team, and is on its way to becoming a global player in the animal-free dairy market. Founded in Australia and now headquartered in Palo Alto, California, Change Foods' geographical expansion gives it a global advantage, as Bucca explains: "Change Foods has been built as a global company from the start, maintaining our roots in Australia as we expanded to the US and now to the UAE. Our global approach allows us to stay connected to several developing ecosystems,

while tapping into the best available resources. We believe these markets offer distinct advantages and significant growth opportunities."

### Targeting animal-free casein

Change Foods is targeting animal-free casein, and intends for its first market launch to be mozzarella pizza cheese, which Bucca describes as the "holy grail" of animal-free dairy. "If we can deliver a stretchy, melty, delicious animal-free pizza cheese, we will be able to address a massive gap in the market between consumer expectations and existing plant-based options." Change Foods is working towards regulatory approval at pace, starting with the US GRAS approval, which Bucca describes as "the most streamlined path to market", before targeting other geographies.

**Change Foods has been built as a global company from the start, maintaining our roots in Australia as we expanded to the US and now to the UAE.**

*David Bucca,  
Founder & CEO, Change Foods*





*Change Foods team*

Change Foods' fermentation process requires simple carbohydrates as a food source for its milk protein-producing microbes.

"We chose to focus on casein, because casein protein is what gives dairy cheese its beloved characteristics – stretch and melt." However, creating casein protein without cows is a complex process, as Bucca explains: "Casein has four subtypes:  $\alpha$ s1-casein,  $\alpha$ s2-casein,  $\beta$ -casein, and  $\kappa$ -casein. Each protein is unique and there is no one microorganism that is well-suited to produce every protein. In fact, the original selection, design and optimisation of a host microorganism takes deep expertise and many rounds of research and development in order to produce the protein

Casein has four subtypes:  $\alpha$ s1-casein,  $\alpha$ s2-casein,  $\beta$ -casein, and  $\kappa$ -casein



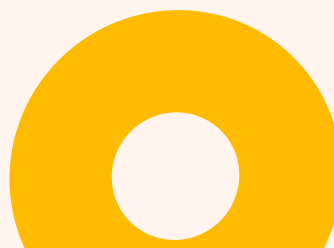


*Change Foods' animal-free casein*

of interest consistently and with high yield. Further, some organisms produce the protein of interest inside the cell (intracellular), requiring for the cell to be opened during the downstream processing, while others excrete the protein (extracellular), making the downstream filtration processing simpler. Casein proteins present a particularly complex set of challenges at each stage of development, with each one requiring a unique microbial host system and possibly different fermentation and downstream processing conditions to achieve commercially optimal protein production levels.”

Producing animal-free proteins is not an easy task, as Bucca explains: “Since the industry is still in its early stages, the biggest challenges lie in strain

development and optimisation, as well as securing fermentation capacity. It is not sufficient to simply engineer protein-producing strains. Significant time and resources are required to develop and optimise both the strains and the fermentation conditions to improve protein yield as you scale.” Bucca previously flagged the lack of scale-up and commercial manufacturing capacity as an issue within the industry, as startups are competing for limited resources. “This is why securing our own manufacturing capacity was a big part of the strategy to future-proof the business,” says Bucca.



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An abstract graphic design featuring a light beige background. In the top left, a blue circle contains the text 'Presented by TINDLE™'. Below it is a smaller purple circle. A large purple circle is positioned in the upper middle. A red circle with a white center is in the upper right. A thick blue diagonal band runs from the middle right towards the bottom right, with a red rounded rectangle overlapping it.

**8**

# Fats & Flavour

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# FATS & FLAVOUR

POWERED BY

**AkoPlanet™**  
by **AAK**

As consumers across the globe adopt flexitarian and plant-based diets, motivated by a variety of factors, including health and the environment, matching an alt protein product's taste and texture to exactly that of animal protein is a tricky business. Research published by Kerry in May 2022 suggests the move towards alternative proteins starts with easy substitutions of existing favourite foods such as burgers, but that, in Australia, taste and texture remain a barrier when it comes to plant-based meat, and a 'beef but better' mindset is front and centre.

Across Asia Pacific there are many startups working on getting the taste and texture of alternative proteins

right, to meet consumer expectations and break through that barrier to purchase. Green Monday, for example, unveiled its OmniNano™ Vegan Fat in November 2022, designed to “lock the flavour inside plant-based meat”, and will use this technology in its new Plant-based Beef Cut and Tips, Plant-based Chicken Wings and Plant-based Pork Cutlet, set to launch next year.

For many companies, though, the right level of juiciness within plant-based meat, to match the behaviour of animal fat in conventional meat, is elusive. Specialty oils and fats leader AAK are making this possible thanks to pioneering technology.





# CASE STUDY: AAK

## PLAYING A CRITICAL ROLE IN ALT PROTEIN DELICIOUSNESS WITH PLANT-BASED OILS AND FATS

2022 has been a bumper year for AAK. In the year since our last report, the Swedish-Danish specialty oils and fats giant has further expanded its presence in the alternative protein industry, as producers and consumers alike realise the importance of having the right fats in plant-based meats, to accurately mimic the taste, texture and behaviour of animal-based meats. To meet this demand, AAK harnesses its 150 years of experience in plant-based oils and fats within its AkoPlanet™ platform for plant-based foods, so consumers who choose a plant-based lifestyle can enjoy the food they love without compromise.

Within AkoPlanet™, AAK is developing plant-based meat and dairy products for retail and foodservice channels. In its innovation centers, one focus area for AAK has been to explore fats and oils functionalities in high-moisture extrusion applications, particularly for plant-based meat applications. This is a major technology within the alternative protein industry, showing the company's ability to evolve and adapt to a fast-changing market.

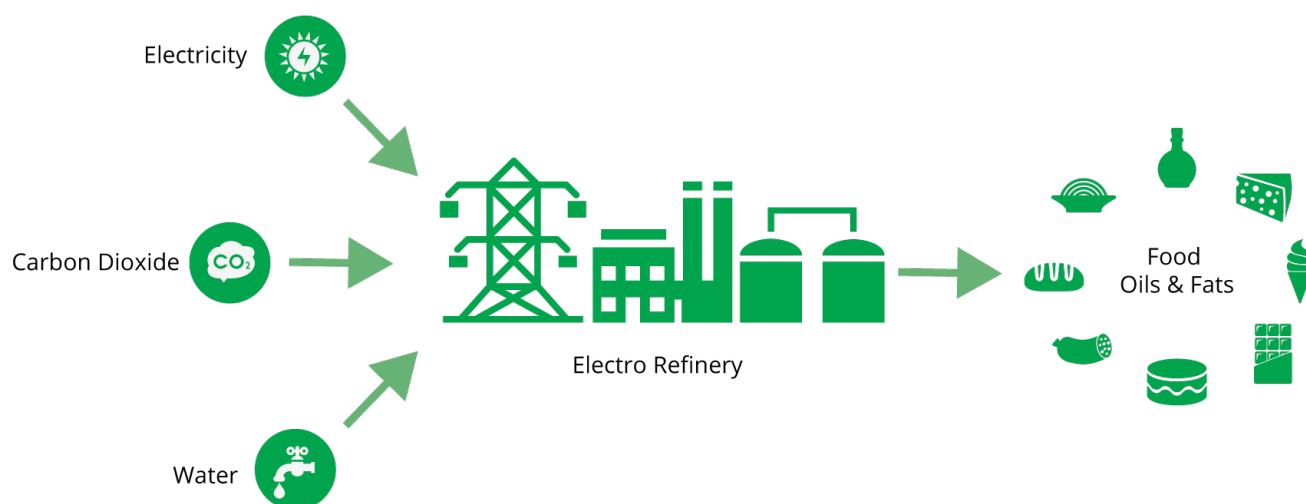
### Investing in the future of food

AAK's Plant-based Foods Center of Excellence in the Netherlands, under construction at the time of our last report, will soon be ready to receive customers. The three-story state-of-the-art center, designed to showcase AAK's co-development process, will feature two pilot plants, an analytical laboratory, a customer experience kitchen, and a sensory suite all under one AAK roof. This will allow customers to bring great-tasting food and beverages to market faster and with confidence.

"Our ambition for the Plant-based Foods Center

of Excellence is for it to be a global destination for new product development within plant-based foods. Fully equipped with state-of-the-art pilot plants supported with sensory and culinary capabilities, we aim to inspire and excite our customers with great-tasting, sustainable plant-based food", says Niall Sands, President of Plant-based Foods at AAK.

AAK harnesses its **150 years** of experience in plant-based oils and fats within its AkoPlanet™ platform for plant-based foods



*Green-On's technology*

In July of this year, AAK invested in Swedish food tech startup Green-On, whose futuristic tech, Power-to-X, is designed to create oils and fats directly from carbon dioxide, renewable energy, and water. When scalable, this technology will provide the exact part of the fat that is needed to create the functionality of solid, high-melting fats, used in plant-based meat, bakery, and confectionery applications, but at a much lower environmental impact than any other known technology at this time. As part of its investment, AAK will provide Green-On with both its expertise in the oils and fats industry, as well as facilities to support and scale the startup's technology. "There are today, besides palm oil, very few plant-based oils with which we can create the functionality of solid, high-melting fats, which are used in, for example, plant-based meat, bakery and confectionary applications", says Karsten Nielsen, Chief Technology Officer at AAK. "This technology provides the exact part of the fat that is needed to create the functionalities of future food production

and with a much lower environmental impact than any other known technology today, making it a perfect fit with AAK's strategy."

AAK has also been working on fats for use in plant-based pepperoni and salami recipes, and has made great progress, as Lucas Hardy, Global Customer Innovations Director for Plant-based Foods at AAK, explains: "Consumers want their plant-based meats not only to taste like meat, but also to look like meat. One of the key challenges for plant-based pepperoni and salami recipes is the disappearance of their 'marbling fat' when they're subjected to heat treatment. When the salami or pepperoni fat melts, this can cause undesirable holes to appear. To mimic the fat marbling of animal products, and prevent melting through heat treatment, we are developing a heat-stable fat that can be used in applications like plant-based pepperoni and salami recipes, that will maintain visible fat pockets even after heat treatment."



*Left - Plant-based pepperoni made with standard fat solution, with melted fat pockets after heat treatment*  
*Right - Plant-based pepperoni made with AkoPlanet™ heat stable flake fat, with visible fat pockets after heat treatment*

## Hybrid alternative protein solutions

Singapore remains AAK's Asia-Pacific hub, and the company continues to view the region as a major opportunity, thanks to the ongoing evolution of its alternative protein industry and the new types of technology coming through thick and fast.

In terms of the future of plant-based oils and fats, Jurgen Kennedy, Business Development Director for Plant-based Foods at AAK in Asia, says that the company will continue to play a “critical role” in mimicking animal fats within plant-based, fermentation-based and cultivated foods. Kennedy considers that sharing technology will be an important factor in growing the industry: “We foresee a future where these three categories come together into one larger industry, in which we can produce protein alternatives using techniques and ingredients from multiple technologies, with plant-based oils and fats playing a greater role via a range of different hybrid solutions. For example, you could have precision-fermented microbes mimicking animal protein for a plant-based milk that incorporates plant-based oils and fats. When we manage to combine these three categories in the right way, the opportunities will multiply. There are indeed exciting times ahead of us.”



**We foresee a future where these three [alt protein] categories come together into one larger industry, in which we can produce protein alternatives using techniques and ingredients from multiple technologies, with plant-based oils and fats playing a greater role via a range of different hybrid solutions.**

*Jurgen Kennedy,  
 Business Development Director for  
 Plant-based Foods, AAK Asia*





For most consumers, the flavour of a plant-based alternative is what elevates an eating experience from good to great. Flavour is so innately tied to enjoyment, and replicating the flavour of animal protein in plant-based meats can be incredibly

difficult. Some companies aim to bridge the gap between animal and plant protein by providing flavours with a real meaty taste, such as flavour and fragrance giant Givaudan.



# CASE STUDY: GIVAUDAN

## CO-CREATING A DELICIOUS AND SUSTAINABLE FUTURE WITH GIVAUDAN

Built on its historic leadership in flavours and taste, Givaudan Taste & Wellbeing is shaping the future of plant-based food experiences. With an expanded portfolio of products, a deep knowledge of plant-based technology, and an extensive ecosystem of partners and collaborators, the company is driving game-changing innovations in alternative protein.



*Chefs preparing dishes featuring Givaudan's ingredients*

### An ecosystem for tomorrow's plant-based experiences

Already a leader in the meat alternative movement, Givaudan supports customers in their quest to deliver more delightful and mindful food experiences.

As the meat alternative space quickly evolves, delivering delicious new products requires agility, efficiency and innovation. Building the ecosystems for creating the meat and fish alternative proteins of tomorrow means close collaboration with industry players. From food & beverage companies to universities and startups, each player brings crucial knowledge and expertise to the table.

Givaudan participates in ongoing research with the University of California at Berkeley, leading to the publication of several white papers with new insights on the plant-based sector. The most recent edition takes a comprehensive look at the latest technologies for alternative proteins, from dry extrusion to mycelium biomass fermentation.

### Protein innovation centres across the globe

In addition to its partnership with Berkeley, Givaudan is also actively working with many of the technologies cited in the paper. For example, Givaudan, Bühler and Migros have collaborated to form the Cultured Hub in Kempththal, Switzerland, working together on cultivated meat, fish and seafood, and precision fermentation.

The Hub is part of Givaudan's extensive network of alternative protein innovation centres, across four continents, that includes the Protein Innovation Centre in Singapore, the Protein Hub in Zurich, MISTA in California and, soon, the Tropical Food Innovation Lab in Brazil.





*Bühler and Givaudan's Protein Innovation Centre in Singapore*

## A state-of-the-art innovation centre in Singapore

Opened in 2021, the Protein Innovation Centre in Singapore is jointly run and supported by experts from Givaudan and Bühler, and enables agile product development at scale.

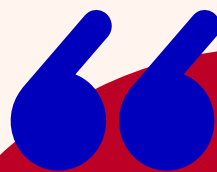
Food processing companies, startups and university researchers from Asia Pacific can co-create enticing plant-based food experiences at the Singapore Protein Innovation Centre. Equipped with a pilot scale wet and dry extruder, a product development kitchen, storage facilities, meeting amenities and a viewing area, the Protein Innovation Centre is designed with the end-to-end process of plant-based protein production in mind. Visitors benefit from the pilot technology of Bühler's extrusion and processing equipment combined with Givaudan's culinary facilities and world-leading expertise in flavour, taste, ingredient and product development.

Support is offered throughout the co-creation process, from raw material selection to consumer testing. The facility can produce up to 40 kilograms of plant proteins per hour and features dry extrusion as well wet extrusion technology. Working with experts from both companies, customers can develop high-quality products suitable for Asian and global culinary applications at scale.

## Helping plant-based startups in Asia Pacific to scale

In 2022 Givaudan joined forces with Bühler and Cargill to help accelerate startup innovation in plant-based protein. After successful programmes in North America and Europe, the partners launched the Scale It Up! Challenge Asia Pacific. The Challenge helps innovative plant-based protein startups to scale up and commercialise by providing resources, mentorship, and expertise.

By fostering co-creation and collaboration and leveraging wide-eyed thinking, Givaudan is able to deliver food experiences that consumers love.



**By fostering collaboration with customers and other companies, from startups to leaders in the field, and building a strong innovation pipeline and proprietary technologies, Givaudan has become the partner of choice for co-creating new meat alternative products.**

*Michele van der Walt,  
Regional Head of Innovation,  
Givaudan Taste & Wellbeing APAC*



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9

# Supply Chain

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# SUPPLY CHAIN

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The world is in the midst of a food supply chain crisis, fueled by rising energy prices, the ongoing conflict in Ukraine, and a post-Covid hangover. The combination of these has caused endless disruption and wreaked havoc with distribution. Plus, for some countries, export restrictions have caused further disturbance, and mean that producers, retailers and foodservice outlets are struggling to meet consumer demand.

Global meat prices reached an all-time high in June, according to the UN FAO's meat price index, and this has been part of a myriad of factors leading to increased demand for alternative proteins.

Startups in the industry have been faced with scaling up their supply and organising reliable distribution, especially in Asia, where distribution often equals business, as lots of alt protein brands here rely exclusively on distributors rather than building their own supply chains and potentially opening themselves up to issues.

Distribution leaders in the space can help, and organisations with the right connections, a robust and ethical infrastructure, and a market-proven strategy, such as renowned international distributor Classic Fine Foods, could be key to a company's success.



# CASE STUDY: CLASSIC FINE FOODS

## THE PARTNER OF CHOICE FOR THE BEST ALT PROTEIN STARTUPS

Classic Fine Foods is a food distribution company, supplying the highest quality ingredients from across the world to chefs, pastry chefs, and retailers in ten markets across Asia, the Middle East, and Europe. Its team of 1,000 colleagues work with more than 30,000 SKUs, and 12,000 customers rely on its service every day. Classic Fine Foods is especially present in major international cities. There's a good chance you'll spot a Classic Fine Foods truck on the streets of Singapore, Hong Kong, Dubai or London, melting pots for food and culture, where the consumer base helps shape the food trends of tomorrow.

Classic Fine Foods has been partnering with alternative protein startups since 2018. It was the first international launch partner for Impossible Foods, landing the brand in Hong Kong, Macau and Singapore. Since then, its aim is to position itself as the partner of choice for the best alternative protein brands in the world, providing a ready distribution network to support rapid scalability, and selecting only the highest quality, most versatile and innovative products to add to its portfolio.

### Building its network of alternative protein specialists

Within alternative proteins, Classic Fine Foods has built a multi-geographical team of specialists because, as Mickael Penvern, Group Category Manager - Alternative Proteins at Classic Fine Foods, explains, the firm believes "coordination is key to ensure coherence, speed, exchange of information and replicability of best practices". The Classic Fine Foods team scouts the market 360 days a year, both centrally via its Alternative Protein task force based in the Netherlands and Singapore, and locally in

individual markets, researching information about the biggest breakthroughs in the fields of plant-based, fermentation-based and cultivated proteins. Penvern continues: "At Classic Fine Foods, we share a genuine interest in the future of food and we choose to be trailblazers. We want to help emerging technologies that create incredible new products to reach foodservice and retail, and we want our clients to have access to the most striking food innovation."

To date, Classic Fine Foods has partnered with 16 alternative protein brands. All of them are carefully-selected, high quality substitutes for meats, seafood, eggs or dairy. The latest brands to join Classic Fine Foods' portfolio include Redefine Meat's 3D-printed flank steak (CFF UK) and Coolhaus ice cream made with Perfect Day's animal-free whey protein (CFF Singapore). "Launching Coolhaus ice cream into Singapore has been a big moment for us in 2022," says Karen Tay, GM of Classic Fine Foods Singapore and Group Lead for Alternative Proteins. "It's our first brand of products made with fermentation-based proteins, and we're thrilled to bring this

Classic Fine Foods' team of **1,000** colleagues work with more than **30,000** SKUs across **650** brands, and **12,000** customers rely on its service every day



breakthrough innovation to Asia.” Alex Brittain, SVP International at Perfect Day, adds, “We feel very fortunate to have found a mission-aligned partner like Classic Fine Foods to launch Asia’s first animal-free dairy products. Their passion to innovate and support sustainable food solutions is clear to see, but their commitment to quality is what enables them to build trusted relationships across the markets in which they operate. We are excited to work with the pioneering team at Classic Fine Foods as we expand to new categories and markets in the near future.”

The next step for Classic Fine Foods is the “Holy Grail” of alternative protein, cultivated foods. Tay says: “We are very enthusiastic when it comes to cultivated meats, seafood and fats. We are great advocates for a more sustainable food system and continuous improvements in this space. Hence, we want to be among the first companies in the world to help bring these breakthrough ingredients to the kitchens of chefs”.

## A chef-led distribution strategy

This go-to-market approach, popularised by consultancy firm NX-Food, relies on selecting suitable culinary experts and locations to create positive consumption experiences for target end consumers, thus building a strong demand for their innovative product. Chef Jose Luis Del Amo, Executive Chef of TheTasteLab at Classic Fine Foods Singapore, explains: “Chefs are now being increasingly regarded as the “celebrities” of the food industry, with strong influencing power. We are always looking for opportunities to offer new experiences to our customers. In our role, we serve as managers of first impressions, skilled influencers, and storytellers. For the chefs we work with, their culinary credibility, together with the atmosphere of their establishment, and the trust that consumers have in them, are transferred to the product’s brand.”

Classic Fine Foods also works with retailers, from prestigious department and specialty products stores to mass-premium hyper and supermarkets, in global cities, regional hubs and tourism areas.



*Chef Jose Luis Del Amo with fellow chefs at a B2B event in Singapore*

To work with Classic Fine Foods, the bar is high. Above all things, it is looking for the best quality, as Penvern says: “We can choose to work with a world-acclaimed scale-up or a local startup, both with very different approaches to marketing, branding and expansion, but we make sure they are the best we have ever tasted in their respective categories.” The Classic Fine Foods team sees particular potential in alternative protein technologies within its network in Singapore, Hong Kong, the UAE, and the UK. Ash Parkes, Category Manager at Classic Fine Foods UK, explains: “I’m seeing an increased demand for a point of difference in this category now; a plant-based steak is outselling a burger, for instance. Our chefs look to plant-based foods to be ingredients in the creation of a dish”



CFFALT recipe book concept

## CFFALT - a platform exclusively dedicated to alternative proteins

Classic Fine Foods' next step is to inspire chefs, consumers and the ecosystem with its new platform exclusively dedicated to alternative proteins, CFFALT. Via a website, Instagram handle and a recipe book, currently in the process of being built, CFFALT will highlight interesting and exciting ways that chefs and consumers alike can use the products in Classic Fine Foods' alternative protein portfolio. Penvern explains: "Through CFFALT we want to show the variety of options, the diversity of cooking styles that can be applied to the products Classic Fine Foods distributes. Alternative proteins should not be limited to fast food burgers and nuggets. We want to inspire chefs and end consumers to push the limits of these ingredients, to be creative, to play with them to discover their versatility." The recipe book, targeted to launch in Q1 2023, will be the first in the world to showcase dishes made with cultivated foods.

As to what makes Classic Fine Foods stand out versus other players, Jens Michel, Group CEO of Classic Fine Foods, sums it up well: "Our distribution network gives brand partners access to thousands of doors in

some of the world's most dynamic cities. But what makes us unique is the passion and expertise that link Classic Fine Foods to our partners and customers, and our exceptional ability to convey the story of our brand partners in the most compelling ways."

**At Classic Fine Foods, we share a genuine interest in the future of food and we choose to be trailblazers.**

*Mickael Penvern, Group Category Manager - Alternative Proteins, Classic Fine Foods*



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**10**

**In Their Own  
Words: Ecosystem  
Insiders**

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# ECOSYSTEM INSIDER: CHINA



**Doris Lee**  
CEO, GFIC

Q

**How do you think consumer attitudes towards alternative proteins are changing in China?**

Since 2.0-level plant-based products landed in the China market in 2019, the sector has evolved from merely a concept into actual products consumers can buy. As a result, consumers' awareness of such products has deepened, as have their expectations. Instead of seeing plant-based meat as a high-tech product, they now regard it as a food product that can fulfill their basic expectations by being accessible, tasty, and reasonably priced.

Q

**What are the biggest drivers of product purchases in China?**

Health, taste, reasonable price, and accessibility.

Q

**What do you think it will take for alt protein companies to really win with consumers in China?**

China has a long history of integrating plant-based cuisine into daily life by using exquisite cooking techniques to create meat-like dishes. So, while hyper-realistic alternative protein products might be new to the Chinese, the concept is not unfamiliar. It will lead to high expectations for new proteins by Chinese consumers, which will undoubtedly bring a lot of challenges to new protein companies. Deliciousness is most important.

Companies will need to start having real-time conversations with consumers and understand their target customers, including what their needs are, and when and where they consume alternative protein products. The key is to teach consumers how to incorporate a company's product into their standard meals.

Q

**Which segment of consumers in China do you believe to be the most engaged with alt protein? And the least? Why?**

Alt protein is the future, so it appeals most to Chinese consumers who are open-minded to trying new things. Enactivism, or so-called "enactive cognition,"

**China is still waiting for a "popular product" to truly open up the plant-based meat market, gain recognition from mainstream consumers, and bring in a stable customer flow.**

*Doris Lee, CEO, GFIC*



plays a part in the alt protein industry's success. The sector resonates more with consumers who want to evolve with alt protein products over time.

Additionally, we can also observe the trends of Chinese customers adopting sustainable behavior in the market. According to research by BCG, consumers with the most significant concern about sustainability are actually from China (93%) for many categories, including grocery retail, snacks, beverages, and dining out. Chinese consumers have higher adoption rates for sustainable behaviors or buying sustainable products and services across these categories, too.

Q

**What are some of the most successful products in China?**

A good product truly impresses the local market. Many marketing gimmicks can indeed attract the attention of some consumers and allow them to take the first taste but, if the product is not impressive enough to mainstream consumers, it will be difficult to inspire a repurchase and the product will be a flash in the pan. China is still waiting for a "popular product" to truly open up the plant-based meat market, gain recognition from mainstream consumers, and bring in a stable customer flow.

Q

**How has the alt protein industry in China changed in the past year?**

**Plant-based:** We can see that the maturity of the industry is ongoing. As more and more key players

launch their alt protein products on the B2B and or B2C markets, they have also changed rapidly to meet their clients' needs.

**Fermentation:** At present, there are 13 fermentation companies working on alternative protein in China. Last year, Touyun Biotech, Triton Algae's partner in China, saw its factory officially put into production. Angel Yeast, China's largest yeast manufacturer, has already announced plans to conduct research on the nutrition of yeast protein, and announced plans to enter the alternative protein industry last year. Angel Yeast's existing production capacity will enable it to accelerate the large-scale production of alternative proteins made from yeast protein. Meanwhile, universities and research institutes have also shown increasing interest in the subject, generating substantial results in the process. GFIC identified 12 leading institutions in the field of fermentation in mainland China. Amongst them, many hold patents on optimizing plant-based protein via fermentation technology and synthesising functional ingredients through precision fermentation, while some own world-class research facilities and technological capabilities.

However, as fermentation for alternative protein is still in its early stages of development in China, most companies are still focusing on fundamental R&D for synthetic biology, bioprocess engineering, and single-cell protein production, before moving on to new product development. That's why GFIC launched a research grant in 2021 specifically focusing on the fermentation field.

**Cultivated meat:** At present, most local companies have small-scale experimental production or are on

their way to scaling up to the pilot-scale stage; Joes Future Food is currently investing in the construction of an 80 L bioreactor scale-up system. The number of cultivated meat companies has increased to about ten, and several companies have demonstrated product prototypes, mainly cultivated pork products. Academically, it is particularly prominent. As of this year, roughly 21 articles from domestic research teams have been published in international academic journals, including research results from companies and efficient teams.

Q

### What are the opportunities in China's alt protein industry? What are the challenges?

Winning over consumers to alternative versions of whole-cut products, such as layered pork belly, will be much more difficult, as any alternative will need to faithfully replicate the distinct “mouthfeel” and texture of meat. This challenge is one area in which novel processing methods and cellular agriculture (e.g. biomass fermentation from sources such as mycelium, or directly cultivating animal cells in vitro) will have a key role to play.

In 2022, various national-level departments have put forward proposals to accelerate the development of cultivated meat and protein fermentation technologies, as well as policy support for the plant-based protein industry. Since 2020, the Ministry of Science and Technology has offered a program of competitive research grants in the green biomanufacturing National Key R&D Program. These undoubtedly gave a huge boost to the industry.

The Bioeconomy Five-Year Plan further instructs state ministries and commissions to “increase investment in resources such as capital, technology, and talents” for novel alternative protein food scientific research projects and formulate policies to support the development of related industries. How this trickles down into measures benefitting local companies is something to be on the lookout for.

As the sector scales, product prices are already falling. China's manufacturing capacity will be a definite advantage in further lowering unit costs, particularly in areas such as fermentation and ingredient processing.



Q

### Is Big Food getting involved in this sector in China? How so?

Many traditional food industry giants have opened plant-based meat production lines in China, such as Unilever's Vegetarian Butcher, Nestlé's Harvest Gourmet, and meat giant Cargill's PlantEver. Mengniu, Yili, Angel, Shuangta, and New Hope are all actively expanding into the plant-based market, as well.

Big corporates that are embracing alternative protein in China (including fermentation):

- Single-cell protein (fermentation): Angel Yeast & Touyun/Triton Algae Innovations;
- Investment fund: Joyvio (a local agri-food group under Legend Holdings) joining hands with SK (Korea's third biggest conglomerate) to set up a local alt protein fund;
- Cultivated meat: Beijing Capital Agribusiness & Foods Group;
- Plant-based meat: New Hope Group (launched a plant-based meat factory, and they also invested in a US-based fermentation company: MycoTechnology).



# ECOSYSTEM INSIDER: HONG KONG



**Norma Chu**

Founder & CEO, DayDayCook

2020, and difficulties with fresh meat supply, along with hygiene reasons, accelerated the introduction of plant-based meat into the mainstream household pantry. Today, we also see a much greater variety of plant-based protein products - from minced meat and patties, to dumplings and all types of ready-to-heat rice boxes. So a lot has happened in five years. I think Hong Kong consumers are adequately familiar with the plant-based protein category. The next phase for plant-based brands in Hong Kong will be to continue to improve on products and to reinforce value propositions to consumers to sustain repeat purchases, which is in line with the global trend.

**Q**

**What are the biggest drivers of product purchases in Hong Kong?**

Hong Kong consumers are driven strongly by novelty products. In the early phase, collaboration with star chefs and restaurants is the common strategy. I think that, as the market matures, health and sustainability at an affordable price point will be the key factors for repeat purchasing.

**Q**

**How do you think consumer attitudes towards alternative proteins are changing in Hong Kong?**

Hong Kong has always had a very vibrant food scene, and is one of a handful of cities that truly excel in both Eastern and Western cuisines. Hong Kong is also actually one of the world's first markets to be exposed to plant-based meat - Beyond Meat came here in 2017, OmniFoods and Impossible Meat in 2018, and, more recently, several local startups, such as Good Food Technologies, have entered the market. In the earlier stages, Beyond and Impossible's launch generated a lot of fanfare, and attracted a good amount of trials through top restaurants. OmniFoods carried on the momentum with its collaborations with local celebrities and McDonald's. Then COVID hit in



**Hong Kong consumers are driven strongly by novelty products. In the early phase, collaboration with star chefs and restaurants is the common strategy. I think that, as the market matures, health and sustainability at an affordable price point will be the key factors for repeat purchasing.**

*Norma Chu, Founder & CEO,  
DayDayCook*

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Q

**What do you think it will take for alt protein companies to really win with consumers in Hong Kong?**

Price parity or superiority, near 'perfect' mimicry of meat in taste and texture, clear health benefits, and ubiquitous availability through widespread adoption by the food service industry.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

Local brand OmniFoods by Green Monday is very popular with Hong Kong's consumers. It has tailored its innovation to the local palate (luncheon meat), kept pricing affordable, conducted savvy marketing campaigns with McDonald's and Karen Lam, and developed direct distribution through the Green Common retail network.

Q

**Which segment of consumers in Hong Kong do you believe to be the most engaged with alt protein? And the least? Why?**

Consumers with higher income and who have lived abroad are probably the most receptive, just because they tend to be less price sensitive, have more exposure and hence better understanding of the products. Another is the environmentally conscious segment that cares about the climate impact of meat consumption.

Q

**What are some of the most successful products in Hong Kong?**

OmniFoods' luncheon meat is a great success. Luncheon meat is a local/regional favourite that



appeals to the entire socio-economic spectrum. In the early days, when the market was dominated by minced meat and burger patties, OmniFoods' luncheon meat represented innovative adaptation that broke into the local diet through both fast food giant McDonald's and local diners (Cha Chaan Teng), and really helped to expand the category.

Q

**How has the alt protein industry in Hong Kong changed in the past year?**

We are seeing more local startups emerging, and some are beginning to expand abroad – Good Food Technologies entering into China, Avant moving to Singapore etc. Simultaneously, more overseas startups are also maturing and coming to Hong Kong, such as KARANA and TiNDLE. The space is getting increasingly competitive, which is a good sign that Hong Kong remains an attractive market to showcase novel products.

Q

**What are the opportunities in Hong Kong's alt protein industry? What are the challenges?**

The first is cultivated meat. It is seen as the next generation technology for alternative protein, and will probably be the most important opportunity for the space. With reference to Singapore, its approval of GOOD Meat's cultivated chicken for commercial sale has established the country in pole position to attract startups and talent, as well as to drive the development roadmap of the industry.

Our government needs to take a lead role in terms of regulations, funding, and facilities if it intends for Hong Kong to stay ahead in the alt protein industry. The second is to establish Hong Kong as an innovation and knowledge hub of the region. We already have some extraordinary individuals and companies doing amazing work in the sector – David Yeung of Green Monday, Sonalie Figueiras of Green Queen, Chef Peggy Chan of Zero Foodprint. But there are



still some glaring missing gaps. How can we support, consolidate, attract new talent and ultimately create a complete ecosystem?

The third is quite obvious, to serve as a pilot city and springboard to the China market.

Q

**Is Big Food getting involved in this sector in Hong Kong? How so?**

There are a couple of examples - Lee Kum Kee's VC fund Happiness Capital, which specialises in food tech investment; Tao Heung invested in and shares its manufacturing facility with Good Food Technologies. We are also engaging more food corporations through our accelerator arm, Good Food Movement, so there is involvement for sure, but we also always welcome more engagement.



# ECOSYSTEM INSIDER: INDIA



**Palak Mehta**  
Founder & CEO, Vegan First

economy is highly price-sensitive. Inadequate cold storage facilities and a broken supply chain in India are additional challenges. Despite our high level of digitalization, we are data-dark, and many D2C brands lack omnichannel presence.

**Q**

**What do you think it will take for alt protein companies to really win with consumers in India?**

A broad variety of higher-quality goods that are easily available and reasonably priced. The disruption that “soya chaap” caused almost ten years ago can be used as an example of a successful strategy for alternative protein businesses. Most soya chaap products are conveniently situated close to wine stores and meat stands, which are frequented by consumers. They are thus more widely available. It’s comparable to how easily accessible hot dogs and sausages are in the West. One plant-based meat business in India utilising a similar approach is GoodDot. Some businesses are experimenting with product integration in restaurant menus, which is also a solid strategy to promote awareness.

**Q**

**How do you think consumer attitudes towards alternative proteins are changing in India?**

People are more willing to try these products than they were previously. Celebrities and cricket players from India who invest in plant-based substitutes have undoubtedly begun to increase awareness of the category among urban Indians. In terms of culture, language, and food preferences, India is incredibly diverse. We would need a number of more ready-to-eat vegan meats in different cuisines for a category like plant-based meats to flourish in India.

**Q**

**What are the biggest drivers of product purchases in India?**

Price, accessibility, and taste are the three key factors that influence product purchases in a country like India, which has a population of 1.4 billion. Our



**The people that are most involved and interested in meat substitutes are non-vegetarians and flexitarians. In India, vegetarianism is quite prevalent, and the majority of them are vegetarians by birth and don’t think it is necessary to experiment with meat alternatives.**

*Palak Mehta, Founder & CEO,  
Vegan First*



Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

By introducing kebabs, gravies, and curries, businesses like GoodDot, Greenest, and Wakao have been able to 'Indianize' meat substitutes to a significant extent. Consumers love these desi flavours. Others, like Blue Tribe, Imagine Meats, and Shaka Harry, have been successful in introducing

their products to consumers by securing powerful brand ambassadors from the fields of cricket and Bollywood. Well-known firms who have entered the market, such as ITC, TATA and meat company Licious Foods, have an advantage of a ready supply chain that makes the products much more accessible to consumers and increases their popularity.

Due to their taste, cost, and availability, Onegood, SoyMilky, Sofit, Only Earth, and AltCo are a few of the most popular dairy substitutes.



Q

**Which segment of consumers in India do you believe to be the most engaged with alt protein? And the least? Why?**

The people that are most involved and interested in meat substitutes are non-vegetarians and flexitarians. In India, vegetarianism is quite prevalent, and the majority of them are vegetarians by birth and don't think it is necessary to experiment with meat alternatives.

Both vegans and non-vegetarians frequently use plant-based substitutes to milk for various reasons, such as lactose intolerance, following ketogenic diets, or restrictions due to lifestyle illnesses like diabetes.

Q

**How important is veganism as a movement in India?**

The vegan movement has gained a lot of momentum during the past three years. Numerous things, including the pandemic, famous people, Gen Z, and more exposure to global cultures, have contributed to this.

We have witnessed a drastic shift in the perception of the movement in the last few years. When Vegan First was first conceived in 2015, we were mocked for being “vegan”; now, in 2022, many “mainstream” and “major food” businesses want to collaborate with us to create vegan options. Most of our readers are now transitioning vegans or vegan-curious. Numerous non-vegans aspire to work in the plant-based industry.

The FSSAI (Food Standards and Safety Authority of India) introduced a regulatory framework and vegan logo for foods in India last year, which is possibly the most significant validation of the sector.

Q

**What are the opportunities in India's alt protein industry? What are the challenges?**



India can lead the world in exporting plant-based substitutes owing to its solid agricultural foundation. The concept of “Ahimsa” is also implicitly known by Indians, and vegetarianism is frequently practised. Thus, it is simpler for alt protein to spread and gain acceptance.

Cow's milk is considered sacred in India. (This is ironic since we are one of the largest exporters of beef and leather in the world!) This cultural barrier sometimes makes it difficult to position plant-based milks as healthier and superior.



# ECOSYSTEM INSIDER: INDONESIA



**Firmansyah Mastup**  
Co-Founder, Jakarta Vegan Guide

Q

**How do you think consumer attitudes towards alternative proteins are changing in Indonesia?**

Most Indonesians have been consuming alternative protein in the form of tofu and tempeh for centuries. While tofu and tempeh consumption is common in Indonesia, many still believe they are inferior to animal-based products like beef or chicken, and they're generally considered to be mere additions to their diet, not necessarily worthy replacements of animal-based protein.

At least 50% of the total vegan/vegetarian population in Indonesia are from a Buddhist background, while another 50% are vegan for health, sustainability and animal rights.

However, mock meat is by and large still considered unhealthy and unappetizing by the Indonesian majority. Therefore, the birth of Green Rebel and

other similar products from local food startups are important, as they offer healthier and tastier products that attract more people to try alternative protein. Most people who consume alternative protein live in urban areas like Jakarta, Bandung and Surabaya, as they tend to be more readily-impacted by the growing awareness of a plant-based diet and its correlation with health and the planet.

Q

**What are the biggest drivers of product purchases in Indonesia?**

In general, consumers seek familiarity with the products they purchase. To achieve this, brands would usually shell out for massive promotional campaigns that target a specific demographic, complete with catchy jargons and arresting visuals. For instance, in the 1990s and 2000s, dairy products would be aggressively advertised during a Sunday morning slot on national TV stations, when millions of impressionable children across the country would tune in to their favorite cartoon shows. By being exposed to these fun, colorful and entertaining ads, these children ended up persuading their parents to purchase these products. The parents, seeing how their children took a liking to the ads, as well as having been imparted a sense of familiarity and sold the quote-unquote health benefits of dairy that these ads typically extolled, would then comply.



**Mock meat is by and large still considered unhealthy and unappetizing by the Indonesian majority. Therefore, the birth of Green Rebel and other similar products from local food startups are important, as they offer healthier and tastier products that attract more people to try alternative protein.**

*Firmansyah Mastup, Co-Founder,  
Jakarta Vegan Guide*



Q

**What do you think it will take for alt protein companies to really win with consumers in Indonesia?**

While improvements have been vastly made in the taste and nutrition profile of alternative protein products, price is the biggest barrier. Most products available on the market are at least two or three times more expensive than animal-based protein; in turn, this makes it difficult for many Indonesians to consume them more frequently, let alone make them their main source of protein. There's also fear of alternative protein being highly-processed and that's why health-conscious people shy away from alternative protein products. I would say taste, price parity, nutrition profile and accessibility are the four major factors needed to win over Indonesian consumers.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

Among vegan Buddhists, Veggieway and Vegood are the most popular, followed by other foreign products such as Veggieworld and Everbest. The first two brands are not only local but also offer a wide range of products that cater to various consumer preferences. Their price is also relatively cheaper compared to Green Rebel and foreign products such as Beyond Meat, OMNI and Alpha Foods. For mainstream consumers, Green Rebel is currently leading the retail and B2B sectors, followed by Proteina, OFF MEAT, Beyond Meat and OMNI. Green Rebel is the only one doing both retail and B2B/food service distribution. Beside its clever marketing and pricing

strategy, Green Rebel is more successful than the others thanks to the versatility of its products, which take inspiration from everyday Indonesian and Asian dishes. Green Rebel also offers different cuts of alternative protein, and this is a unique selling point. Plus, they have an established presence with their Burgreens restaurant chain, from which Green Rebel was born. This head start eventually allowed the company to experience faster growth.

Q

**Which segment of consumers in Indonesia do you believe to be the most engaged with alt protein? And the least? Why?**

Currently, vegans are the most engaged with alternative protein products, simply because they have a lack of options when it comes to protein choices. However, flexitarians are actually the highest driver of alternative protein consumption, as this group of people usually believe that having more protein variety is essential to balance their diet. The least-engaged would be the older generation/boomers. They have very little desire to change their diet and believe that animal-based protein is the only and most superior source of protein. To them, alternative products are unappetizing and unhealthy.

Q

**How important is veganism as a movement in Indonesia?**

Unfortunately, veganism is not quite seen as a movement in Indonesia yet; for the most part, it's either seen as an elitist, urban and upper-middle class 'diet' or 'lifestyle', or a 'radical' Western import with a 'militant' following. To grow the movement, I think it's important to tackle it from various angles,



including animal rights, health and sustainability; this way, it would paint a more holistic, across-the-board picture on veganism, why it's important in the current global context, how easy, healthy, cheap, applicable and relevant it is in the Indonesian context, and why it needs to be considered as a proper movement, not just a diet or a lifestyle.

Q

**How has the alt protein industry in Indonesia changed in the past year?**

The alt protein industry is slowly but surely branching out to nationally renowned food and beverage businesses. Although not all of these partnerships have been successful, there's definitely been a trend in the past year among popular local and international brands such as Starbucks, IKEA, Burger King, Domino's Pizza, Abuba Steak, Fore Coffee, Bakmi GM and Sushi Tei to launch plant-based options at their eateries.

Q

**What are the opportunities in Indonesia's alt protein industry? What are the challenges?**

Various studies and surveys have shown that Indonesian consumers are actually likely to go vegan and vegetarian. A number of 2020 studies conducted by PwC, Rabobank and Temasek, which surveyed around 3,600 consumers in ten Asian countries, as well as Australia and New Zealand, showed that 43% of Indonesian customers were interested in becoming vegan or vegetarian in the next 12 months.

According to Global Plant Protein, the alternative protein market in Indonesia is estimated to grow at a CAGR of 27.5% between 2021 and 2027, or around US\$600 million by 2027. This would make Indonesia one of Asia's fastest-growing countries in terms of plant-based protein.

However, there are several challenges. The first one is regulation, which makes price parity in alternative protein products difficult as meat and dairy industries are highly subsidized by the government. There is also lack of market education about nutrition in Indonesia, which makes alternative protein difficult to penetrate a bigger market.



Last, and this can be viewed as either a challenge or an opportunity, is the fact that Indonesian consumption of animal meat is still very low. One of the lowest rates in the world so promoting a meat-free diet can be a challenge. There's also a lot of disparity in access to food, income level and health status among Indonesians, which brings another layer of complexity to making alt protein more popular and frequently consumed in Indonesia.

Q

**Is Big Food getting involved in this sector in Indonesia? How so?**

Some big food companies have already tried to tap into this sector. For instance, Unilever introduced its Vegetarian Butcher line in 2020 by partnering with Burger King and launching the Plant-Based Whopper. Earlier this year, Nestlé unveiled its plant-based meat brand, Harvest Gourmet, at the Food and Hotel Indonesia 2022 event. Unfortunately, these innovations have not been supported by a strong brand awareness, leaving many Indonesians oblivious to them.



# ECOSYSTEM INSIDER: JAPAN



**Ugo Bataillard**

Co-Founder & CEO, GourmetPro K.K.

Q

**How do you think consumer attitudes towards alternative proteins are changing in Japan?**

Awareness of alternative proteins, mainly plant-based, is increasing. This is due to more products, and new categories of products - i.e. seafood and egg alternatives - hitting store shelves and restaurant menus. This is not to say that we see evidence of the number of consumers who want to try products increasing, just that there are more opportunities for consumers to try plant-based products, and the existing consumer base, driven largely by health, is seeking new, novel, high quality products.

The Japanese diet has traditionally relied on plant-based sources of protein, especially soy-based products like tofu, so consumers in Japan already see the Japanese diet as plant-based. Compared to Western countries, fewer consumers are motivated by animal welfare and sustainability concerns, so do not have a desire to consume plant-based alternatives of meat and fish products.

Q

**What are the biggest drivers of product purchases in Japan?**

There is a small percentage of vegan consumers in Japan. These consumers purchase alt proteins as vegan-friendly products that fit within their diet. In this way, the trend is no different to vegan consumers around the world.

In terms of the general consumer base, health is the biggest driver of alt protein purchases in Japan. Allergies, to products like eggs, and intolerances, such as lactose intolerance, drive consumption of alternative eggs, seafood and milks. Older generations who have difficulty digesting meat, or need to limit meat consumption for health reasons, purchase meat alternatives to enjoy the experience of eating meat.

COVID-19 increased health consciousness in Japan and drove many consumers to pursue healthier lifestyles. This increased awareness about the unhealthy aspects of meat consumption. Some consumers, in efforts to reduce meat consumption, have turned to plant-based products as alternatives. Finally, driven by government and corporate promotion of SDGs, consumers in Japan are increasingly aware that alternative proteins are a sustainable food choice. This is certainly making consumers more curious about alt protein products, though it does not appear to be driving purchases from our perspective.



**Driven by government and corporate promotion of SDGs, consumers in Japan are increasingly aware that alternative proteins are a sustainable food choice.**

*Ugo Bataillard, Co-Founder & CEO, GourmetPro K.K.*



Q

**What do you think it will take for alt protein companies to really win with consumers in Japan?**

Taste, price and availability.

Japanese consumers have high standards for product quality. They will not consume a product with inferior taste for sustainability reasons, for example. Alt protein companies need to aim for high-fidelity products in terms of taste and texture that are adapted for local tastes. Here, think yakiniku or tonkatsu rather than burgers and sausages.

Japanese consumers are price-sensitive. Expensive alternatives of processed meats will not interest consumers. Alt protein companies can start by targeting more expensive animal products, like IntegriCulture is starting with foie gras, and SeaSire/Azuma Foods are targeting expensive varieties like unagi (eel).

Japanese consumers need more opportunities to try alt proteins. Collaborations with popular chain restaurants like Yoshinoya, a gyudon chain popular with salarymen, will get products in front of consumers' faces. Another opportunity area is the home. If plant-based meat or fish alternatives can make it into Japanese people's cooking repertoire, it will significantly boost the market.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

**Brands:** the large meat companies' brands, i.e. Otsuka Foods, Nippon Ham, Itou Ham, are most widely available in supermarket stores and dominate the market. Big brands have strong distribution networks so can get space on store shelves, leveraging their brand which is familiar with Japanese consumers. Retailers and convenience stores also have their own white-label brands for plant-based products.

**Startups:** NEXT MEATS has relatively high brand recognition thanks to collaboration with restaurants and shelf space in some supermarket stores. They are active on social media and collaborate with local restaurants and big chains, such as IKEA, which increases awareness of their brand.

In alt dairy, Alpro has been very successful entering the Japanese market. Their success lay in surveying the market, and positioning their product as a healthy, fiber-rich drink. Investing in educating Japanese consumers about oats, which were not widely consumed when Alpro entered the market, was also part of their success. Education is also certainly key for alternative proteins.

Q

**Which segment of consumers in Japan do you believe to be the most engaged with alt protein? And the least? Why?**

Consumers in their 50s seem to be purchasing plant-based products at retail. This is a time when Japanese consumers begin to think seriously about their health. Also, consumers in their 20s and 30s show interest in plant-based products as part of a healthy lifestyle.

Q

**What are some of the most successful products in Japan?**

Plant-based milks, soy, almond and oat are very successful. Soy milk with Marusan and oat milk with Danone's Alpro.

Plant-based snack products such as Otsuka Pharmaceuticals SOYJOY are also popular with consumers.

Q

**How important is veganism as a movement in Japan?**

Data shows 2.2% of Japan's population identifies as vegan. A major challenge in Japan is that veganism is viewed as a kind of cult by Japanese consumers, who feel vegans are overly assertive in trying to persuade others to adopt a vegan lifestyle.

There are likely a large number of closet vegans in Japan, who will consume animal products in social settings so as not to "inconvenience" the group with their different dietary requirements.

Q

**How has the alt protein industry in Japan changed in the past year?**

There has been a clear increase in categories of available products. 2022 saw several alt-tuna and alt-egg launches in Japan. There's also growing interest from companies in developing plant-based products, i.e. Ajinomoto positioning alt protein as a major pillar of future business. Outside of the large meat processing companies that dominate the plant-based meat market, we're seeing signs of other food companies setting up capabilities to operate as OEMs for plant-based meat. This is a strong sign of confidence in the market from the F&B industry.

Q

**What are the opportunities in Japan's alt protein industry? What are the challenges?**

Authentic alt-seafood. Cultivated and fermentation-



based products with high-fidelity taste, texture and nutrition have potential in Japan.

Collaborations with restaurants frequented by salarymen i.e. gyudon chains, and features in magazines and TV that promote cooking with alt protein ingredients will really help create exposure for the industry in Japan with groups of consumers that have high purchasing power.

Q

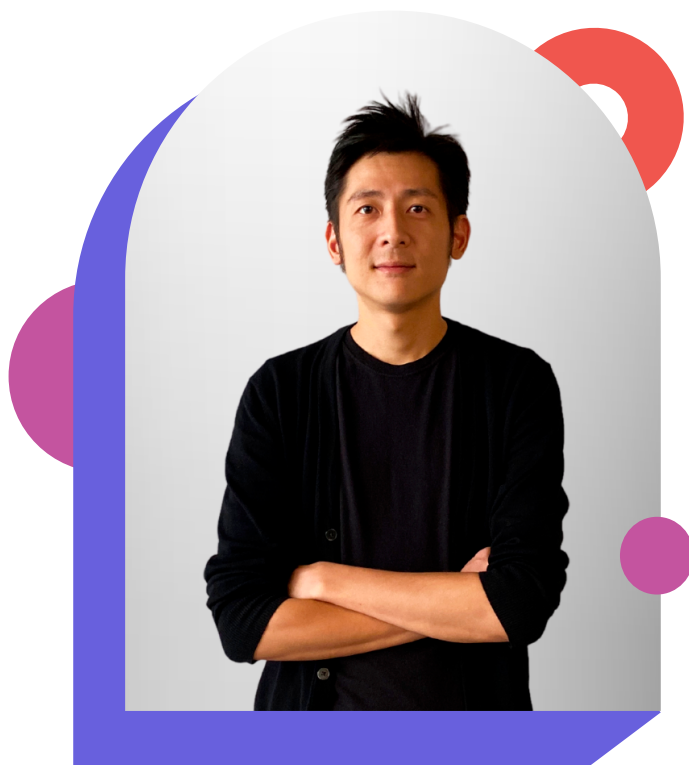
**Is Big Food getting involved in this sector in Japan? How so?**

Nippon Ham, Otsuka, Itoham Foods, Kyupie have all launched plant-based products. Where Big Food needs to be more involved is in investing in and supporting early stage (pre-seed, seed) alt protein startups to help innovation and entrepreneurship heat up in Japan.

Big Food is investing in later stage alt protein technology (NH Foods -> Integriculture, Toyo Seikan -> Shiok Meats, Food and Life Co -> Blu Nalu). There is very little investment in mycoproteins so far, which is a whitespace in Japan.



# ECOSYSTEM INSIDER: TAIWAN



**Victor Chen**

**Founder & CEO, Foodland Ventures**

**Q**

**How do you think consumer attitudes towards alternative proteins are changing in Taiwan?**

We've observed that, in the Taiwanese market, consumer interest is definitely growing with the help of also having a range of growing options. Compared to 3 - 5 years ago, when we only saw a handful of imported options on supermarket shelves, we're seeing small, independent restaurants as well as big chains offering plant-based milk and meat options. However, because "mock-meat" products have been in the Taiwanese market for decades, we see that consumer attitudes tend to associate "alternative meat" with "mock meat" which is often targeted towards religious consumers. We believe that, to really gain wider consumer interests, alternative protein products need to set themselves apart with taste and health benefits other than just "rebranding" efforts.

**Q**

**What are the biggest drivers of product purchases in Taiwan?**

If we rule out traditional products that have existed in the market for decades, like "mock-meats" or soy milk, and focus only on the newer wave of products like the ones post-Beyond Meat or post-Oatly, the biggest driving force we see is the "lifestyle" branding associated with these products, which represent a trendy lifestyle. Such branding is pushed out by big brands like Starbucks to the younger generation of consumers that are quick to take on a new trend. However, to continue driving growth, we see that "health benefits" of such products play an important role to turn "occasional" consumers into "regulars."

**Q**

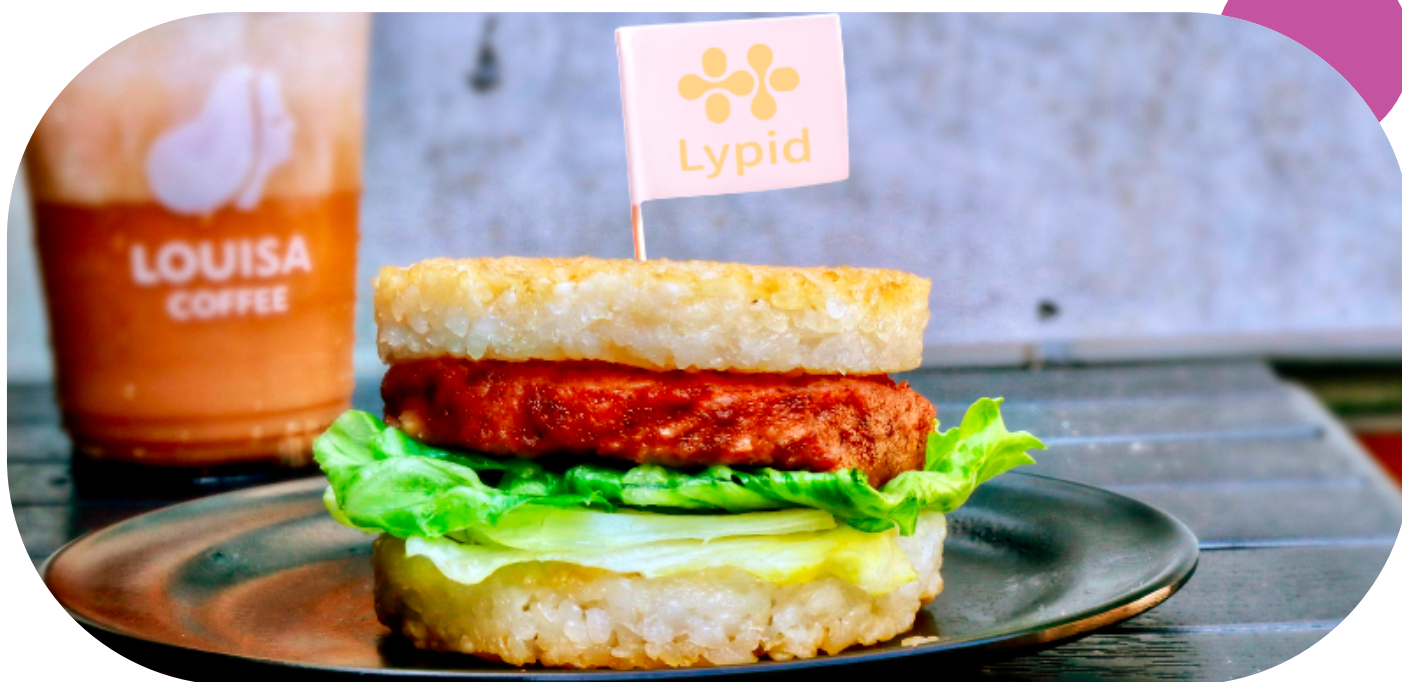
**What do you think it will take for alt protein companies to really win with consumers in Taiwan?**

Better taste, lower price and also health benefits. With the wide range of available options, whether imported or domestic, consumer brands struggle to differentiate themselves as we see similar extrusion techniques and ingredients. To really win consumers over, ingredients that could improve the taste, texture or health benefits become crucial for alternative



**Taiwan, with a very robust farm-to-table ecosystem and one of the highest density of food-brand IPOs, has big corporations eager to get into the space to accommodate the growing demands foreseen from growing consumer consciousness for the environment and personal wellness.**

*Victor Chen, Founder & CEO,  
Foodland Ventures*



protein producers. Taking alternative-fat startup, Lypid, a Foodland Ventures' portfolio company, as an example: their collaboration with Louisa Coffee, the largest coffeehouse chain in Taiwan with 500 stores nationwide, really pushes alternative meat products to mainstream consumers with an improved texture, taste, nutritional values and competitive price.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

The market is really competitive, and brands really struggle to differentiate themselves, as mentioned. Imported options, like Beyond Meat, are probably still the most well-known for end consumers, but the price premium creates a certain barrier as well. As for domestic players, a very prominent B2B / B2C brand is Hoya Foods, which entered the mock-meat market but is now tapping into alt protein by working actively with outlets like convenience stores 7-Eleven and Family Mart. These existing OEM / B2B players are eager to work with innovations, and many of them have existing channels to bring these innovations to customers. We see ingredient startups working with different B2B / B2C brands rather than going D2C. Because of this, we believe that, apart from just "branding," finding ways to optimize

the taste and minimize the price for existing bigger brands will be something that could set the product apart in such a competitive market.

Q

**Which segment of consumers in Taiwan do you believe to be the most engaged with alt protein? And the least? Why?**

We see the highest engagement among younger generations that are willing to explore new things. As mentioned, the idea of "alternative protein", in the sense of Beyond Meat and Oatly, represents trendiness and lifestyle. With big brands pushing these products as a new source of revenue stream, the "early-adopters" are the primary source of consumption. Price-sensitive consumers are the group that's less engaged, as such products still come with a price premium.

Q

**What are some of the most successful products in Taiwan?**

Alternative milk products are quite successful as there's a strong coffee-drinking culture in Taiwan. The trendy and conscious branding also overlaps with the coffee-drinking demographics. We see local coffee chains like Louisa Coffee, or even convenience

stores like 7-Eleven, offering oat milk options. From international chains to independent artisanal coffee houses, plant-based milk options are now very standardized.

### Q How important is veganism as a movement in Taiwan?

Veganism has existed for quite a long time in Taiwan due to religious reasons. In fact, according to a study by Euromonitor in 2021, Taiwan is the second-highest in the world with 13% of population being vegan. However, how much of this can actually translate to consumption of “alternative proteins” is the question, as we see religious vegan consumers are not necessarily looking for meatier taste or texture in their food. We see much more potential in the growing “flexitarian” sector that is health-oriented.

### Q How has the alt protein industry in Taiwan changed in the past year?

Today, we see many more options being offered at channels that target “every day” consumers, like 7-Eleven, Family Mart, Louisa Coffee and McDonald’s. In the past, the majority of alt protein options were within independent, boutique restaurants at a much smaller scale. Now, with big brands and outlets coming into play, consumers have been more exposed than ever to alt protein.

### Q What are the opportunities in Taiwan’s alt protein industry? What are the challenges?

The biggest opportunities we see are for big food corporations to work within the space. Taiwan, with a very robust farm-to-table ecosystem and one of the highest density of food-brand IPOs, has big corporations eager to get into the space to accommodate the growing demands foreseen from growing consumer consciousness for the environment and personal wellness. On the other hand, the biggest challenge for startups is creating



differentiation within the competitive market and trying to go beyond the “early-adopters” to more price-sensitive general consumers.

### Q Is Big Food getting involved in this sector in Taiwan? How so?

Very much so. Traditional mock-meat manufacturers are coming into this space with their in-house brands. Big food groups are putting alt protein on their menus and, perhaps the most prominent example as mentioned, Louisa Coffee (with more than 500 outlets in Taiwan), successfully rolled out alternative protein options with Lypid. We really see big food deploying resources, including lots of capital, as the next driver for the industry, including not only alt protein, but AgriFood tech innovations in general. We believe now is really a great time for startups, whether domestic or international, to work with Taiwanese Big Food for their next steps.



# ECOSYSTEM INSIDER: THAILAND



**Joanna Broomfield**  
Co-Founder, ROOT The Future

Q

**How do you think consumer attitudes towards alternative proteins are changing in Thailand?**

Consumers in Thailand are definitely becoming more open to alt protein, and are slowly being convinced that it can, and does, taste great. Despite this, I do think there is still some work to do in convincing the consumer that alt protein can actually completely replace animal products. Many consumers still tend to view it as a 'do-good' or 'healthy' one-day-a-week or one-meal-a-week thing, but don't seriously consider that it could be a healthy and complete replacement for animal products.

Q

**What are the biggest drivers of product purchases in Thailand?**

Health seems to be the most noticeable reason people tend to buy plant-based products here, as well as it being a trend that people are hopping on to. Many people are also becoming more aware of the environmental impact of our food, but health concerns and weight loss still seem to come out on top.

Q

**What do you think it will take for alt protein companies to really win with consumers in Thailand?**

Price parity, taste and affordability. It seems like if companies can deliver the same amount of protein, at the same price or lower with a great taste, that would be a huge win with almost all consumers.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

Let's Plant Meat and Swees cheese (both Chiang Mai-based companies) seem to have established a solid reputation with plant-eaters. They both do a fantastic job with their product taste, and consumers know this, so tend to be loyal to these brands.



**For Thailand, the main challenge seems to be education about alt protein and plant-based foods. Getting the population to understand what plant-based is, and why it is necessary for our health, planet and the animals is a challenge." Joanna Broomfield, Co-Founder, ROOT The Future**

*Joanna Broomfield, Co-Founder,  
ROOT The Future*



The bigger companies like First Pride (Tyson) and Meat Zero (CP) have also done a good job at penetrating the plant-based meat market. Their pricing is reasonable and, of course, the marketing budget seems huge, so they have been able to reach consumers in ways the smaller companies can't.

And, finally, OATSIDE has been the stand-out product in the plant milks sector this year in Thailand. The Singaporean company seems to have hit the nail on the head with their marketing and branding, and has managed to secure partnerships with almost every cafe and bubble tea shop in Bangkok as far as we can tell! They entered the space in the middle of the year and seem to have overtaken most plant-milks in Thailand in a matter of months.

Q

**Which segment of consumers in Thailand do you believe to be the most engaged with alt protein? And the least? Why?**

Higher income individuals and the younger generation seem to be the most engaged in alt protein. The younger generation are becoming more aware about the environmental implications of animal products and are also very mindful of their health and/or weight-loss.

The higher income individuals definitely have a bit

more freedom to explore the plant-based world here in Thailand whilst we are waiting for price parity for alt protein products. Most of the older, higher income individuals seem to either be interested in alt protein for their health, or because plant-based is still perceived to be a premium product.

Q

**What are some of the most successful products in Thailand?**

Crispy pork is a very popular plant-based protein here in Thailand. It is the one used most often in local dishes (like pad krapao) and tends to be the one most people buy. Plant-based chicken has also become very popular this year after the launch of First Pride and restaurants like Alt Eatery serving some fantastic plant-based chicken.

Q

**How important is veganism as a movement in Thailand?**

Veganism definitely has a place here in Thailand and it intersects with those who are Jay (jay food is vegan, but also omits garlic and onion). In terms of the ethical side, this is definitely becoming more and more well known among vegans thanks to many great Thai vegan activists.

There is also a big expat vegan community. Generally speaking, the vegans are the ones most loyal to vegan restaurants and plant-based products, but there is also a huge amount of non-vegans who are very interested in alt protein.

Q

**How has the alt protein industry in Thailand changed in the past year?**

The main change is that all the big food businesses have started getting involved. It has saturated the market a little, but it has also helped grow the audience for alt protein.

Q

**What are the opportunities in Thailand's alt protein industry? What are the challenges?**

For Thailand, the main challenge seems to be education about alt protein and plant-based foods. Getting the population to understand what plant-based is, and why it is necessary for our health, planet and the animals is a challenge.

Also, education that plant-based food doesn't always have to be a fancy, upmarket meal or product. It can also be a very affordable, local vegetarian product or meal that just happens to use only plant-based ingredients. For us, this is one myth we are really trying to bust, because it tends to put people off 'plant-based' food altogether if they assume right off the bat that they won't be able to afford it.

We're also seeing a lot of people misusing the word 'plant-based' in Thailand. This is very frustrating because it is causing a huge amount of confusion in the space. We have seen people advertising a steak as 'plant-based' purely because it's sitting on a bed of salad! There are also a lot of people who think if something is called 'plant-based' it must include a plant-based meat of some sort. For example, a banana would then not be considered plant-based...

Not only is this frustrating for those who are vegan or plant-based, but the whole confusion tends to wear people out and they give up trying to understand what it means, and just go back to eating meat. Not



only that, many people in Thailand eat plant-based food one day a week as a good deed. When they find out that the food they thought was a good deed, is in fact not, it tends to upset people.

Q

**Is Big Food getting involved in this sector in Thailand? How so?**

Yes, we have seen a lot of the bigger food companies, like Tyson (plant-based chicken), Thai Union (plant-based seafood), Betagro (plant-based pork) and CP (plant-based meat) getting involved in alt protein in Thailand in the last year.

This is great because it helps increase the accessibility of plant-based foods and, at the same time, because these companies have such a huge reach in terms of marketing, it also means that they are reaching and educating people who may not have otherwise known about alt protein and plant-based foods, or even just allows them to see that they exist.

It is also great because these companies are experts in how animal meat usually tastes; this means they can do a great job at replicating that taste and texture with plant-based protein, using their R&D teams.



# ECOSYSTEM INSIDER: SINGAPORE



**Amanda Teng Lee**

Founder, Everyday Vegan Grocer

**Q**

**How do you think consumer attitudes towards alternative proteins are changing in Singapore?**

People have become more open to, and accepting of, plant-based meats and milk products in the last five years. Much of this progress has been due to the superb marketing efforts of Impossible Foods, Beyond Meat and Oatly.

**Q**

**What are the biggest drivers of product purchases in Singapore?**

For people who are actively looking for meat alternatives for regular consumption, a great tasting product and good nutritional profile are critical decision making factors.

**Q**

**What do you think it will take for alt protein companies to really win with consumers in Singapore?**

**MOST IMPORTANT:** The price must be competitive compared to meat. In this regard, Impossible Foods has done a fantastic job at entering local supermarkets at very competitive 'promotional' prices.

**Q**

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

Impossible Foods is doing very well right now. We think their aggressive promotion and marketing activities with restaurants and supermarkets have helped greatly.

“

**We have seen price points move from luxury/ gourmet price points to more meaningful everyday pricing.**

*Amanda Teng Lee, Founder,  
Everyday Vegan Grocer*

Oat milks are extremely popular with families that have dairy allergies. Oatly was doing very well in the past two years, but new brands like Outside with comparable taste and texture have entered the market with much better price points in recent months.

Q

**Which segment of consumers in Singapore do you believe to be the most engaged with alt protein? And the least? Why?**

Vegetarians (buddhist and hindhu) are very familiar with the category of alternative proteins (traditionally known locally as 'mock' meats). A new market of younger, conscious consumers are starting to explore 'plant-based' meats

Q

**What are some of the most successful products in Singapore?**

Oatly, Impossible Foods, Gardein, Violife - these are all basket staples.

Q

**How important is veganism as a movement in Singapore?**

Very important. We have seen veganism transition from being a counter-culture movement into a simple and acceptable lifestyle choice. We don't see ourselves educating people about veganism any more, as the choice of eating less meat and animal-based products has become commonly accepted.

Q

**How has the alt protein industry in Singapore changed in the past year?**

The market has become very, very fragmented. We see more and more brands competing for shelf space. We have seen price points move from luxury/gourmet price points to more meaningful everyday pricing.



Q

**What are the opportunities in Singapore alt protein industry? What are the challenges?**

There is growing demand for plant proteins from a growing class of conscious consumers. As a retailer for the past five years (starting as a side hustle, market participant), I can honestly say that I spend a lot less time educating people about veganism. But the challenge for the market, as a result, is that everyone is entering the market now at a pace that is not matching the growth in demand. With increasing market fragmentation, PRICE is most important. QUALITY (product and brand) ensures return purchases. This is an important transition! Manufacturers tried to market plant-based meats as gourmet/specialty. This does not work any more.

Q

**Is Big Food getting involved in this sector in Singapore? How so?**

Definitely. Big brands like Nestlé and Unilever are bringing in vegan/cruelty-free meats, dairy, groceries and confectionery.

# ECOSYSTEM INSIDER: SOUTH KOREA



**Helen Hae-Ryoun, Gi**  
Co-Founder & CEO, HAE Creative

## Q How do you think consumer attitudes towards alternative proteins are changing in South Korea?

Some Koreans have been eating soy protein meat as simple as the first-generation dried TVP for quite some time. Since 2018, and with the development of fast-growing alternative proteins in 2021 and 2022, more and more people are experiencing Food 2.0 alternative meat.

In a survey conducted by The Voice for Consumers, more than 60% of respondents said that they are willing to try alternative proteins, and it is expected that further changes will take place over the next 2-3 years, along with the changes in social perception that stem from the food industry and the government's support.

## Q What are the biggest drivers of product purchases in South Korea?

First, accessibility: it has improved significantly with the diversity of producers, products, and sales platforms. While traditional plant-based foods were mainly available through e-commerce, current startups and large corporations are expanding on offline shops as well. Also, apps like 'Chaesik Hankki' and 'Vinity' help consumers, and the proportion of plant-based brands at the food expo is gradually increasing every year.

Second, lifestyle. The value of a sustainable and ethical lifestyle has grown as consumers look for businesses that reflect their values, which are becoming more conscious.

Third, quality improvement. No one refuses to eat delicious foods. The food tech field is evolving to develop better taste and quality.

## Q What do you think it will take for alt protein companies to really win with consumers in South Korea?

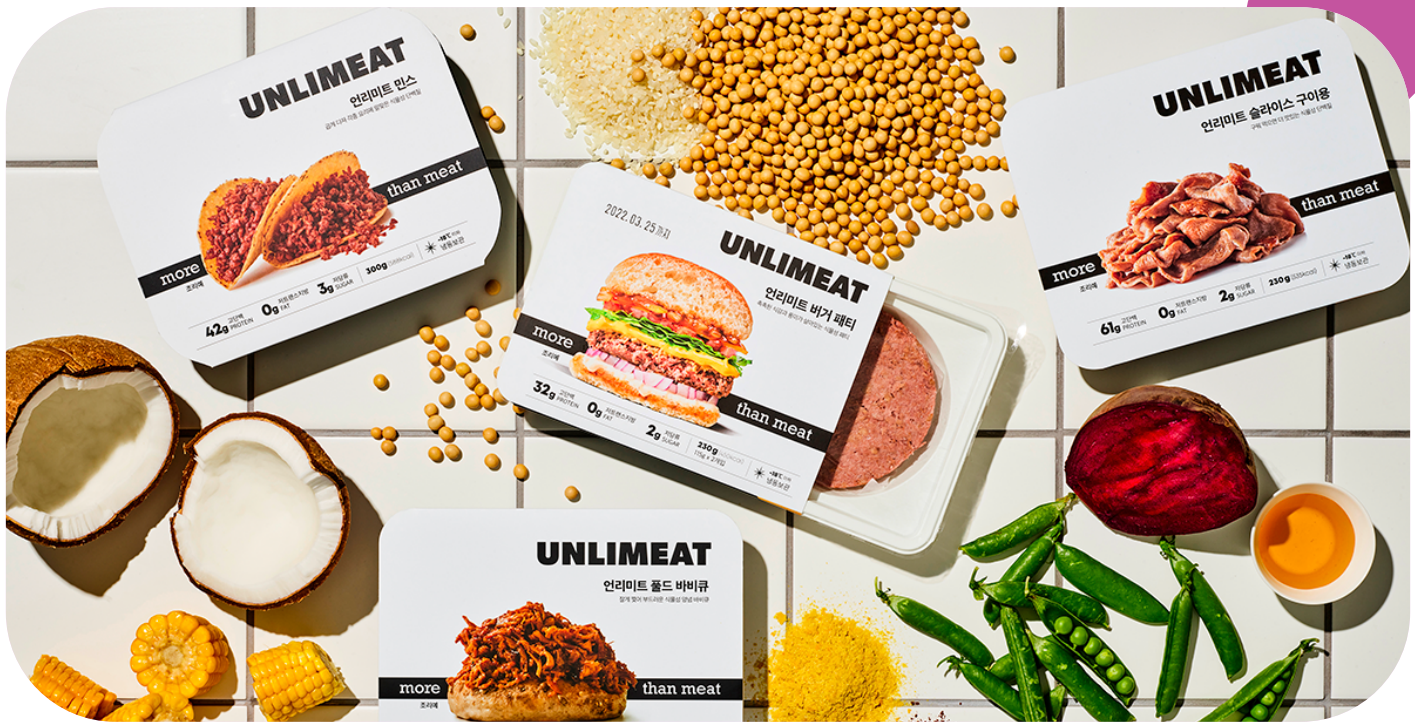
Obviously, taste! We are talking about food, and the biggest factor consumers expect from food is always taste. All survey results around the world prove this.



**In a recent survey, more than 60% of South Korean respondents said that they are willing to try alternative proteins, and it is expected that further changes will take place over the next 2-3 years, along with the changes in social perception that stem from the food industry and the government's support.**

*Helen Hae-Ryoun, Gi, Co-Founder & CEO, HAE Creative*





Education for consumers and producers! No matter how good the product is, no matter how many B2B businesses you make, if consumers do not choose what you are selling, the product is dead and the market will decline. Although government support, investment, technology, and product launches are growing, consumer education is still lagging behind.

Co-mans: Many alternative protein startups have a heavy burden in terms of manufacturing. Using existing factory lines can be difficult, as is scaling-up. That is why some startups have received large investments to build their own plants. Co-manufacturing system must be considered more seriously because it brings lots of benefits in the long run.

Communication with consumers: This communication does not only mean communication within social media or sales platforms. From product development to launch, consumers exist in the imagination. Many companies test their products with their internal teams.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

Unlimeat Slice by Zikoooin Company: lots of plant-based meat products are influenced by Western cuisine, like burger patties, meatballs, nuggets etc. The slice is a popular form of meat which Asian cuisine uses a lot.

V mince by Taekyung (NongShim): compared to minced options by international brands, the scent and flavor of this product is not too strong, which goes well with various dishes and Asian cuisines. In addition, Nongshim opened the plant-based fine dining restaurant Forest Kitchen in 2022, and it captivated the general public in distinguishing itself from most casual plant-based restaurants by offering a gastronomy experience.

ALTist: Galbi flavor and Tuna are well known. It is the first plant-based tuna (tuna can style of texture) in Korea. ALTist also opened two Korean-Chinese plant-based restaurants, 'Alt.a', and used their products in the menu.

Wemeet: Korean fried chicken is famous not only as a main dish but also as chicken & beer. They make Korean fried chicken with various sauces. And Wemeet uses the term "Wemeet pride". They engage a lot with consumers by collaborating with many restaurants and creating small campaigns.

**BriteBelly:** After collaborating with Starbucks, this brand became popular. They focus on RTE (microwaveable) and offer a safe menu that people are familiar with, like hamburger steak, meatball spaghetti, etc.

**PlanTable by CJ Cheiljedang:** Bibigo Mandu brand is very famous in Korea. From plant-based mandu (Korean dumpling) to samgak kimbap (Korean onigiri) and various meat lineups, people trust their taste standard.

**VARO:** They make fresh plant-based meal kits. Main ingredients are fresh vegetables and sauces that you can put in the pot or pan to cook immediately. This brand has loyal fans who love convenient processes but still fresh foods. To manage their quality and food waste, they choose to go with a pre-order system, delivering 2-3 days after receiving an order. All vegan instant ramen are nice: Samyuk, Pulmuone, Ottogi, Nongshim, Samyang are doing great.

**Tofu noodle by Pulmuone:** As Pulmuone started as an organic farm and grocery store in the early 1980s, it has quite a nice brand image. Asian people love tofu. Pulmuone makes tofu and tofu noodles. It is traditional and well known as good food for Koreans.

**Plant-based milk:** Maeil soy milk by Maeil Daries is very popular traditionally. Oatly, distributed by Dongsuh, is also beloved. Almond and coconut milk have very different feedback of like vs dislike.

**Seafood:** There are not yet many products in Korea. There are only a few imported products, like fish balls. Korean startup ALTist launched plant-based tuna as frozen and Untuna by Unfisk109 (tuna can). Dokdo shrimp by cultured meat startup CellMEAT is not released yet, but I'm very excited about it.

Q

**Which segment of consumers in South Korea do you believe to be the most engaged with alt protein? And the least? Why?**



The group that responds most sensitively is vegan and plant-forward. People who practise strictly vegan diets for a long time tend to consume more wholesome foods, and those who have been switching to plant-based more recently consume alternative proteins as bridge foods a lot. According to 'Chaesik Hankki' insight, people in their 20s and 50s account for about 70% of the main consumer group, with more women than men.

The least-engaged are children, teens and older than 60s. Children and teenagers follow their parents' or schools' decisions. However, this group has a big potential in the future thanks to climate and environmental education, and plant-based meals are being tested in schools. Soon, this generation will become self-directed consumers and lead the markets.





### How important is veganism as a movement in South Korea?

It is rising but will still take a long time for regular people to accept veganism as a life principle. Animal liberation groups put the veganism movement in the public eye. Climate justice NGOs like Greenpeace, Environmental Union and Green Union have also recently helped make a connection to vegetarianism. Over 35,000 people participated in the climate justice parade held in September 2022, and as a movement in solidarity with animal rights also.



### How has the alt protein industry in South Korea changed in the past year?

As it is in its early stage, it has been record-breaking every year since 2018. The alternative food scene is led by startups both in plant-based and cultured foods. A few of them started to enter the global market and their technology has gradually been getting attention.

Big changes have been happening within large corporations in 2021 and 2022. Big food players like Nongshim, CJ, Pulmuone, Ottogi, and Shinsegae actively launched plant-based brands using all the resources they have built as food companies. They also invested in overseas companies.

The government has been preparing the framework of regulations and labeling. It must be accelerated for hybrid and cultivated meat very soon.

The Korean plant-based cafe and restaurant business is also getting bigger.



### What are the opportunities in South Korea's alt protein industry? What are the challenges?

#### *Opportunities*

- The penetration rate of the alternative protein

market, which was 0.4% of the total domestic food market in 2021, is expected to increase to 12% by 2030. Annual growth is said to be 20-30% in general.

- Investment opportunities in alternative protein can be appealing, even for individuals.
- Seafood, cold cuts, eggs, dairy (cheese, creams, and yogurt)

#### *Challenges*

- Positioning between conventional meat, plant-based, hybrid and cultivated.
- Technologies in TVP, process of production, flavoring and texture.
- The price gap of what products cost vs what consumers expect to pay.



### Is Big Food getting involved in this sector in South Korea? How so?

In the Korean market, big food players have been dancing around in the alt protein space. PlanTable by CJ Cheiljedang, Veggie Garden by Taekyung and Forest Kitchen (restaurant) by Nongshim, plant-based product line and Plantude (restaurant) by Pulmuone, Hello Veggie by Ottogi, Better Meat by Shinsegae Food and its The Better Flagship store.

During 2021 and 2022, big food companies started to create research projects in partnership with startups. For example, Lotte Central Research Institute also signed an NDA with mycelium-based company Mycel and began joint development of alternative meat. Daesang signed a business agreement with Xcell Therapeutics (serum-free media) in 2021, and has been conducting research to reduce the manufacturing cost and secure stability of cultured meat. Both Daesang & Lotte also invested in cultured meat startup Space F.

In the U.S, Pulmuone introduced alternative protein brand Plantspired through Nasoya and Shinsegae Food established a subsidiary in August for Better Meat in 2022.



# ECOSYSTEM INSIDER: VIETNAM



**Scott Green**  
Founder & Director, SÔNG  
Thuần Chay

Q

**How do you think consumer attitudes towards alternative proteins are changing in Vietnam?**

The benefits of alternative proteins is quite a new concept for our market. Traditional plant-based proteins like tofu are relatively popular, but suffer from the same myths about testosterone that affect Western advocacy campaigns.

Beans and legumes are not commonly eaten staples either, so there is a prevalent idea that protein only comes from animal-based sources.

One anecdote I like to share is the reaction to our subtitled version of the “The Game Changers” trailer receiving more views than the English version. It was genuinely surprising for our audience to see leading

athletes consuming only plant-based proteins. In expat and more international communities there is a popularity for alt proteins, but this is a very small subset of the overall landscape.

Generally speaking, alternative proteins are seen as inferior and more expensive than their animal-based counterparts. There is movement in this area but nothing mainstream as of yet.

Q

**What are the biggest drivers of product purchases in Vietnam?**

From surveys within our own organisation, and also from discussions with leaders in the marketing field, the main concern for Vietnamese consumers is health. In many product types the health benefits are clearly stated, usually with a benefit to skin and brain health.

Another phenomenon distinct to Vietnamese consumers is that often products are labelled clean or safe, seeing as the perception is that a lot of processed products are likely to include GMOs and pesticides. Therefore, the main motivation for our audience is convincing others that plant-based proteins are similar in quality to animal-based ones.



**I believe it's a combination of price, awareness, availability, and taste that will need to be overcome to convince families and individuals to change their habits in an impactful way.**

*Scott Green, Founder & Director, SÔNG Thuần Chay*



Q

**What do you think it will take for alt protein companies to really win with consumers in Vietnam?**

Unfortunately I don't think there's just one single issue to overcome before we reach a tipping point. I believe it's a combination of price, awareness, availability, and taste that will need to be overcome to convince families and individuals to change their habits in an impactful way.

I think, as a priority, I would focus on awareness and show that there are people who would like to eat more plant-based foods if they were empowered to do so.

Q

**Which brands/startups do you feel are most popular with consumers? What are they doing differently from the others?**

There are a few startups that have entered the market that are still trying to define their brand and

build their market presence. They have had success marketing online in vegan communities and selling their products direct to consumers. Unfortunately, they need more support to really communicate their product benefits.

Recently a plant-based start-up "V-meat" entered Shark Tank Vietnam and walked away with nearly \$165,000 of investment. Their popularity came from an understanding of specific Vietnamese taste preferences and a more economical price point. In terms of taste profile, the international and Asian brands are far more ahead. The likes of Unlimeat, Let's Plant Meat, OmniPork, Phuture Farms, Beyond Meat etc are available but have done very little to specialise their products for a Vietnamese audience. The price is extremely prohibitive so it is a difficult sell.

Q

**Which segment of consumers in Vietnam do you believe to be the most engaged with alt protein? And the least? Why?**



Vietnam has a different culture to the West, whereby most young adults will live at home with their family until they get married. This is really the only time that consumers can practice any sort of autonomy with their diets.

We see the most interest within the 24-35 year-old female demographic. Often members of this group have more purchasing power and are more conscious of the health benefits of replacing calories from animal-based proteins with vegetables and other plant-based proteins. We also feel that women are more sympathetic to animal welfare and environmental concerns in general.

With the large amount of green media published in English compared to Vietnamese we are seeing a large amount of English speakers also aware of the benefits of alt proteins.

Q

**What are some of the most successful products in Vietnam?**

In terms of sales volume, the traditional Asian mock meats enjoy the most success as they are cheap, available and can effectively replace the texture and taste of their animal-based counterparts. They are, however, dated in terms of their recipes, and are not convincing enough to make ardent meat eaters change their eating habits.

Vinamilk and Vinasoy, who represent some of the largest national beverage corporations, have recently launched plant-based milks and drinking yogurts, with the most common formula being a soy/nut hybrid, often with walnuts, red beans or almonds.

Beyond Meat has somewhat of a niche market, with gourmet burger restaurants often serving one as a token offering on a menu, and does create some intrigue from wealthier locals and expats.

Q

**How important is veganism as a movement in Vietnam?**



With the Western term “veganism” meaning the abstention of animal products to protect animals, the idea is quite new to the Vietnamese public.

Most Vietnamese practicing vegans and vegetarians are encouraged and motivated by Buddhism for reasons of compassion and receiving favourable karma. There are many anecdotes of (particularly) women opening vegan or vegetarian food stalls or businesses to help their family receive kind fortune.

Unfortunately, there isn’t much of a grass roots advocacy scene or protest/demonstration culture like the US or UK. These practices are unsupported



by the Vietnamese government and the risk of imprisonment is extremely high.

The most common and safest way for us and others to promote veganism or animal welfare is to embrace social media and find ways to engage people in the power of changing our eating habits with recipes, discussions, articles and informative videos.

We have accrued over 250,000 followers and are seeing lots of people interested in the idea of plant-based diets for secular reasons, which we believe is key to extending veganism's appeal.

Q

**How has the alt protein industry in Vietnam changed in the past year?**

I would say change has been very slow, especially since Vietnam was significantly affected by Covid in 2020, so there has been a lack of investment in new products.

Our corporate engagement work has been affected as restaurants and food service providers have been extremely reluctant to invest time into developing plant-based dishes.

Q

**What are the opportunities in Vietnam's alt protein industry? What are the challenges?**

The opportunity for Vietnam lies in its rich biodiversity, relatively low costs for startups, and a growing number of young graduates who want Vietnam to catch up with greener and more sustainable agricultural practices/food trends.

Vietnam is home to some of the most creative chefs and we hope these skills can be transitioned to the plant-based sector.

Vietnam (particularly Ho Chi Minh City) is more susceptible to the impacts of climate change, with rising sea levels bringing more flooding and river salinity, so there is a growing desire amongst the

youth to find solutions to help mitigate their risks.

The challenge will be in convincing the market to adopt plant-based foods at a higher cost.

One of the biggest obstacles we've encountered is the tendency for plant-based meats to be frozen as consumers often travel in 30+ degree heat and with a motorbike, so purchasers have to be careful when they buy frozen foods.

Another interesting statistic we observed this year was that only 12% of Vietnamese women would consume lab-grown meat compared to 17% of men. I don't think this is something we could read into much at the moment as there isn't much awareness of the purported benefits of lab-grown meat, but it is indicative of some of the challenges we'll face.

Finally, many consumers (45%) still shop at traditional markets, whereas plant-based meat brands tend to be sold in supermarkets.

Q

**Is Big Food getting involved in this sector in Vietnam? How so?**

Unfortunately, there has been little movement in this space from any of the large food providers to provide alt proteins, especially in the alt meat sector. Unilever Philippines has recently launched plant-based meats so there is some room for optimism in the near future.

As mentioned previously, plant-based milk is the fastest-growing sector in Vietnam, and with Nestlé launching their plant-based formulas in other ASEAN countries there is room for optimism.

When we've engaged with marketing agencies and research companies they have seen an increase in healthier eating habits, but not enough for the industry to meaningfully take notice like we've seen in the West with interventions like Veganuary.

There is a month in the lunar calendar when the Vietnamese are keen to eat more plant-based foods. We are hopeful that in the coming years Big Food will see this is a good time to launch their new products.

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# 11

## Conclusion

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# CONCLUSION: OUR RECOMMENDATIONS

There's no denying that, globally, alt protein's acceleration has slowed down. This isn't an isolated industry occurrence as, in fact, most sectors, everywhere, are changing pace and adapting to an ever-more-uncertain world.

Shifts in consumer behaviour, crowded supermarket shelves and mediocre products don't alter the sector's intrinsic value proposition. With a climate crisis that is more acute than ever, a move away from animal agriculture towards alternative protein isn't a nice-to-have, but rather a fundamental necessity if we are to secure the future of our food systems and, ultimately, our planet.

A slowdown may not be a bad thing, since it allows industry players to regroup and refocus their activity. Some may abandon ship in markets that aren't working for them, like meat giant JBS, which announced this past October that it was ditching its US plant-based venture, Planterra. Some may choose to double down and speed up, seeing the industry contraction as an opportunity for their own exceptional tech, as with TiNDLE's unstoppable global acceleration.

That being said, after three boom years, the alternative protein industry needs to regroup and refocus. Particularly in Asia, where the sector is still relatively nascent, there is a real opportunity to take in the learnings from the US and Europe and chart a stronger course ahead.

Below, we share our four recommendations for the continued success of the APAC alt protein industry.

## RECOMMENDATION 1: Prioritising consumer education as a driver for change

As an industry, so far we have failed to understand and listen to our customer, adequately educate the general public about our products and technologies, assist consumers in how to use, store, prepare and cook our products, and offer a strong response to the “plant-based meats are processed” arguments propagated, in the main, by Big Meat. As Adam Hanft wrote for AgFunder in October, the industry is currently suffering from being stuck in the “declarative” phase of marketing. Until we solve these issues, we will continue to face significant headwinds in the form of flattening demand.

Governments will need to take the reins on educating citizens on the importance, and benefits, of a plant-based lifestyle. This could start in schools, as per the Seoul Office of Education, whose new initiatives in South Korea include increasing the number of vegetarian meals on offer within education settings, alongside education programs that promote the importance of carbon-neutral foods for a sustainable future.

Plus, in order to ensure the right skill sets for developing sustainable foods in the region, there needs to be a provision for further education in these fields, as with the National University of Singapore,







which debuted “Introduction to Advanced Meat Alternatives”, a graduate-level alt protein module, in January of this year. This education piece shouldn’t just fall to governments, though. Companies will also need to take the lead here, alongside the media that supports the industry.

In general, the industry needs to provide consumers with more information about alternative protein technologies and products, especially in Asia where there are language and cultural differences. At the moment, most people don’t understand what precision fermentation protein, or cultivated meat, are, let alone the difference between them. We need to remove the opacity around how plant-based meats are processed, and we need to educate consumers on how to properly use alternative protein products in their home kitchens. Platforms like Classic Fine Foods’ CFFALT are a good start; we hope more will follow.

As mentioned earlier, we have the chance to reframe the narrative around alternative proteins across the region. Where in the US the narrative has been largely taken over by anti-plant-based meat refrains and too many similar products that are mediocre and lack any differentiation from each other, in APAC we are still at the beginning of a growing sector. We can do better at this than in the US, and to some extent in Europe, and drive consumer engagement to secure a sustainable future.

We need more funding for quality journalism, niche media, eating and dining guides, community events, audio, video and social content, apps and other tools and resources that can help consumers better

understand and interact with alt protein products. Consumers cannot be expected to connect the dots. As an industry, we must hold their hand, from the supermarket to the kitchen. Consumer apps, such as Singapore-based vegan social media platform abillion, which earlier this year announced that it was giving its users the option to own shares in the company, are working to fill the gaps with product reviews and education campaigns, but there is room for many more players to meet an outsize need for trusted, accessible information and resources.

## RECOMMENDATION 2: Better collaboration on best practices around commercialisation & regulation

A crucial success factor for many companies going forward will be collaboration. Bringing together expertise in a more focused way, as with the APAC Cellular Agriculture Coalition, and new global alliance for cultivated foods, for example, will drive innovation towards commercialisation. The recent nomenclature agreement for cultivated meat establishes a regional precedent that can be replicated in other markets around the globe, and is a key signal that the industry can use its regulatory harmonisation to help to shape future regulatory practices.

Open sourcing of key technology could be key here. Sharing learnings, too, are critical. Alt protein non-

profit think tank The Good Food Institute has very active arms across the region, including GFI APAC, headquartered in Singapore, GFI India, and for-profit consultancy GFIC, based in Shanghai, all of which recognise that exchanging data and learnings can only lead to success, and that a collaborative, mission-driven industry is in everyone's interest.

### RECOMMENDATION 3:

## A renewed focus on product localisation to meet domestic demand



Every startup, industry expert and venture capitalist we spoke with when writing this report raised the importance of products that are adapted to Asian tastes - in fact, not just Asia as a whole, but taking into account a localised approach for the region's separate cultures and cuisines.

The plant-based sector, in particular, has become a very crowded space in the last couple of years. Hundreds of startups have popped up across Asia Pacific and the rest of the world, often working on similar products (plant-based meat patties and chicken nuggets, mainly), with similar tech. In our last report we talked about plant-based 2.0, and this idea is still holding strong. The next wave of plant-based alternatives will have cleaner labels, will be minimally-processed, or - and this is crucial - will need to meet a localised market need in a way a plant-based patty simply can't. Ideally we'd like to see a stronger focus on the region's four key sources of animal proteins, namely eggs, pork, seafood and chicken.

Brands with products designed for Asian palates are winning in Asia Pacific. Major Western companies,



like Impossible Foods, Beyond Meat and Oatly, have developed products specifically for Asian markets and are seeing their consumer base flourish, while startups such as Perfect Day have created products that appeal to Asian tastes, such as ice cream in flavours like sesame and red bean. Plus, homegrown startups are using their intrinsic knowledge of their local customer base to design products that satisfy local tastes and cultures from the get-go, such as Growthwell Foods' konjac-based squid. Integrating plant-based products into existing ways of eating is a proven method of adoption in any market, so the brands that recognise this and don't just land Western-designed or influenced products into Asia tend to see more success.

If they are to succeed here, brands and products need to meet consumers' needs, whether that be halal, flavours and formats for regionalised tastes and cultures, or a focus on those factors that are important to different demographics.

There is a risk that, eventually, plant-based foods could lose ground to cultivated foods, and those made via fermentation. While many plant-based alternatives are better than ever, perhaps the only way to truly convince meat-eaters to follow an animal-free lifestyle is to provide exact replacements for meat and seafood, grown in a different way. We do foresee a shift towards more diverse and climate-friendly protein sources - there are already startups working on this, like New Zealand-based Leaft Foods, and Australia's Wide Open Agriculture, working with leaf protein and lupin, respectively - and a move away from major commodities, like soy and pea, which are already at risk of over-farming.

One key area of opportunity is that consumers in Asia are, on the whole, more concerned about health. In August of this year, GFI APAC published a first-



of-its-kind survey detailing the key factors sending consumers towards plant-based seafood options, and health was a major factor, along with taste and the absence of heavy metal and microplastic contamination. The survey found that consumers are seeking to add more omega fatty acids into their diets; good news, as a growing number of alternatives are satisfying this demand with healthy algae oil, among other things. Another important finding is that consumers will not compromise on the health benefits even if it's at the expense of choosing the most sustainable option, which means plant-based alternatives need to meet or exceed expectations on taste, texture AND positive nutritional to help shift consumers away from animal-based protein's perceived health benefits (and the 'unhealthy' narrative around long lists of ingredients).



#### RECOMMENDATION 4:

### More and better access to startup funding

There are nowhere near enough dedicated alt protein funds (only one for the whole of APAC) and agri-food investors in the region. On the accelerator side, the picture is better, with Brinc, Big Idea Ventures, GROW, Innovate360 and SPACE-F providing supportive launchpads.

Once you start looking beyond the seed and Series A stages, it becomes clear that there is a notable lack of late-stage funds working to serve growing alt protein startups. The largest players end up looking beyond APAC for backing. This is a shame, given the region's increasing concentration of ultra-wealth.

Overall, there is a lack of investing expertise in the alt protein investment sector in the region and, if we are to consider gender diversity, the situation is dire. We struggled to name ten female investors in the space for this report.

The good news is that APAC startups are increasingly attracting world-class funds and backers, and many companies in the regions are able to leverage relationships with larger conglomerates for financial support.

On the whole, there isn't enough funding in Asia Pacific to reflect the magnitude of the task at hand: transforming the region's food system. The region is home to more than half of the world's population and only a fifth of the planet's agricultural land. Not to mention that the climate crisis will affect Asia disproportionately. More funding will be key if we are to support the transition to a sustainable food system that meets the region's growing need for sustainable, nutritious and safe protein.



A noteworthy development is that consumers across the region, particularly younger ones, are becoming more mindful around animal welfare. This is a significant change from previous generations. A report from Sinergia Animal, published in August 2022, found that 70% of Asian food companies are shifting away from battery cages and caged eggs, a major move considering that Asia is the largest egg producer in the world, with more than one billion eggs laid annually. Phichamon Thamasook, Sinergia Animal's Corporate Communications Manager in Asia, commented at the time: "Consumer concern about the origins of their food is increasing, causing companies to look to improve animal welfare standards." Let this be the start of consumers shifting away from eggs altogether, and towards entirely cruelty-free alternatives.



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# 12

# Appendix

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# The APAC Alternative Protein Industry Report 2022

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