



FLYING SPARK

FEEDING  
THE WORLD  
WITHOUT  
CONSUMING  
THE EARTH



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August 2022  
presentation





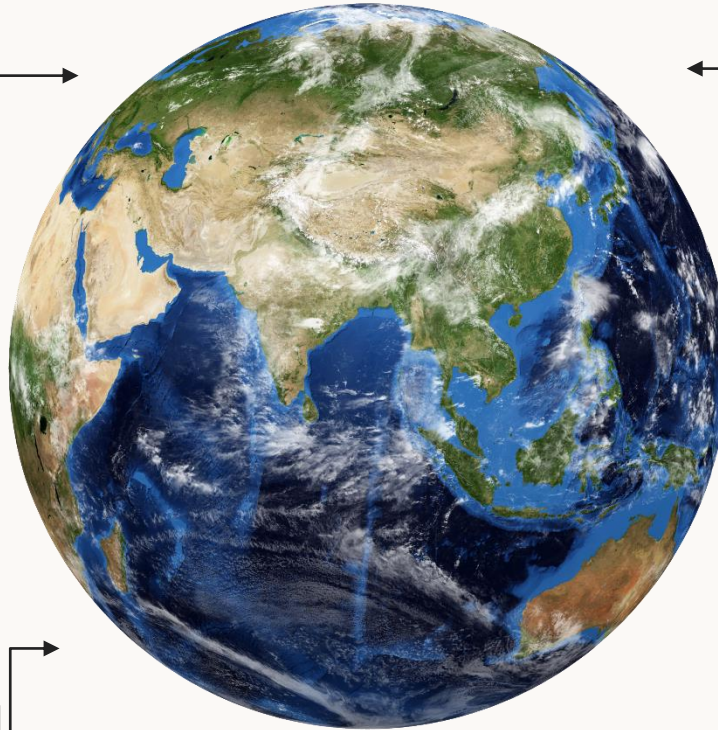
# COMPANY PROFILE

Flying Spark is a FoodTech company, active in the Insects alternative protein space

Flying Spark is producing high quality and sustainable alternative protein from the fruit fly larvae

The company leverages the biological traits of the larvae, while creating optimal cultivation conditions

The technology includes methods and processes that facilitate efficient and reproducible cultivation



The company will incorporate its products in aquaculture, pet food, cosmetics and human food (in the future)\*

The company is currently building its first production facility in Thailand and **listed on the Tel Aviv Stock Exchange**

(\*) The start of marketing and sales of the company's products currently under development is subject to the commencement of actual commercial production at the Company's new Manufacturing plan in Thailand, as well as a number of other conditions (including the establishment of a new production line relying on the company's specialized procured machinery, etc.). In addition, further regulatory approvals are needed also in Europe and the USA. The above excludes the company's alternative protein powder under development which is intended for use in the pet food industry and can already be sold in a number of Asian countries.

# LEADING TEAM



**GILI COHEN**  
Chairman of the Board



**ERAN GRONICH**  
Founder & CEO



**MICHAEL GETTE**  
CFO



**Dr. GALIT LEVIN**  
Science Director



**TAL OZERI**  
Factory Manager



**LEE BEN YOSEF**  
VP People



**AMIR ZAIDMAN**  
Director

# GLOBAL PROTEIN SHORTAGE

**The challenge:** Feeding billions of animals and people with sustainable and high quality protein

## LIVESTOCK FARMING HAS A VAST ENVIRONMENTAL FOOTPRINT

A major source of greenhouse gas emissions contributing to global warming

Massive production of waste and environmental contamination

Significant consumption and pollution of water and land



70% of all agricultural land is used for livestock feed production

Major cause of antibiotic resistance and disruption of microbiome

A source of diseases such as avian and swine influenza



# MULTIPLE MARKETS FOR RISK MANAGEMENT

## Aquaculture industry

- The global aquaculture industry has reached about **\$107 billion in 2021<sup>1</sup>**
- Estimated to grow to **\$170 billion** by 2026 supported by CAGR of 10%

## Pet food industry

- The global pet food industry has reached about **\$97 billion in 2021<sup>4</sup>**
- Estimated to grow to **\$137 billion** by 2028 supported by CAGR of 5%

## The global protein market

- The global protein ingredient market has reached about **\$42 billion in 2021<sup>2</sup>**
- Estimated to grow to **\$85 billion** by 2028 supported by CAGR of 10%

## Oils in the cosmetics industry

- The global oil ingredient market for the cosmetics industry has reached about **\$56 billion in 2020<sup>3</sup>**
- Estimated to grow to **\$72 billion** by 2028 supported by CAGR of 5%





<sup>1</sup> Market Data Forecast. (2021). "Fish Feed Market By Ingredient, By Additive, By End Users Global And By Region 2021-2026"

<sup>2</sup> Grand View Research. (2021). "Protein Ingredients Market Size, Share & Trends Analysis Report 2021 - 2028" [Global Protein Ingredients Market Size Report, 2021-2028 \(grandviewresearch.com\)](https://www.grandviewresearch.com/industry-analysis/protein-ingredients-market)

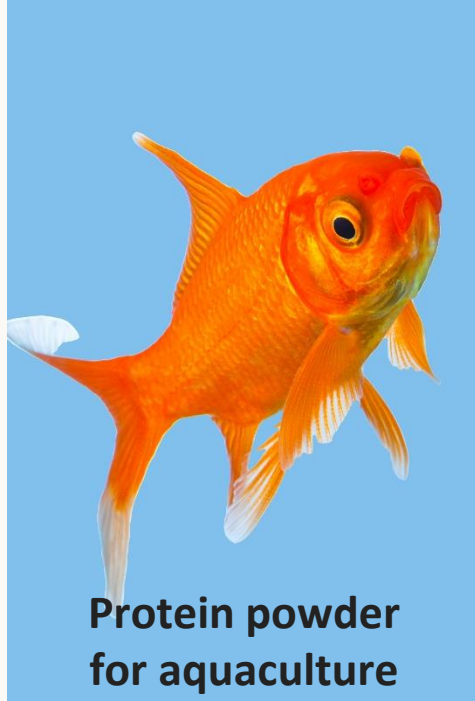
<sup>3</sup> Cosmetic Oil Market Growth & Trends: [Cosmetic Oil Market Size & Share | Global Industry Report, 2019-2025 \(grandviewresearch.com\)](https://www.grandviewresearch.com/industry-analysis/cosmetic-oil-market)

<sup>4</sup> Global pet food market - <https://www.feedandadditive.com/global-pet-food-market-and-trends/>

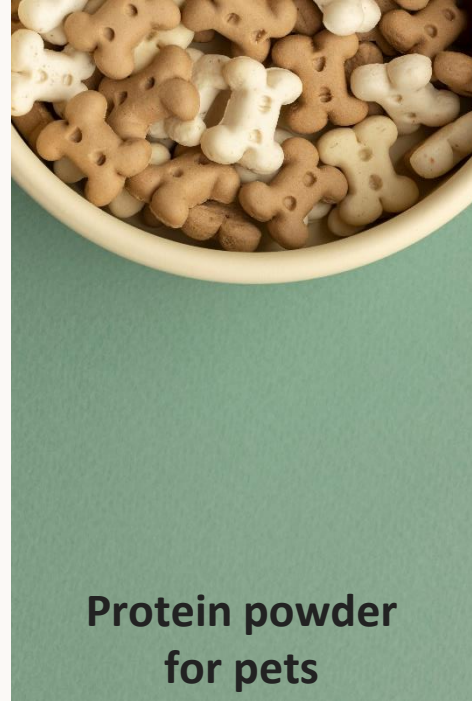
# A \$87 BILLION ADDRESSABLE MARKETS

					
	Fish feed	Pets	Humans	Oil	Total
Global market	\$107B	\$97B	\$42B	\$56B	<b>\$293B</b>
% Protein/oil in final product	10%-30%	15%-20%	100%	15%	
Total addressable market (TAM)	~\$20B	~\$17B	~\$42B	~\$9B	<b>~\$87B</b>

# MULTIPLE PRODUCTS FOR RISK MANAGEMENT



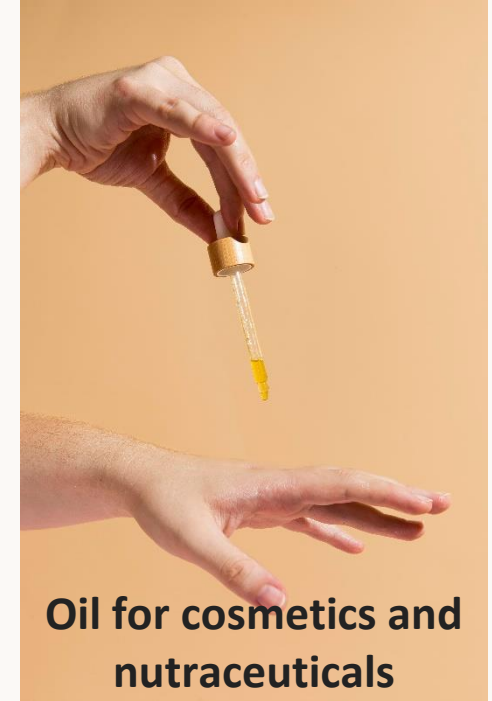
Advanced, sustainable solution for fish feed, with beneficial components from dietary residues of larvae



High quality, sustainable protein ingredient for pet food products



High quality, sustainable protein ingredient for human food products



A unique active ingredient for cosmetics and nutritional supplements industries



# CONSUMERS ARE SHIFTING TO **ALTERNATIVE PROTEIN**



## **Health reasons**

People are choosing to consume less animal protein for health reasons such as heart diseases, weight control and diabetes



## **Ethical reasons**

Ethical reasons concerning animal welfare are motivating people to re-examine the impact of their nutritional choices on animals



## **Environmental concerns**

Growing awareness towards negative effects on the environment that result from farming and processing of meat

# ADVANTAGES OF PRODUCING PROTEIN FROM THE FRUIT FLY LARVAE



# MINIMAL ECOLOGICAL FOOTPRINT



**99%**  
Reduction of land  
use with  
Vertical farming

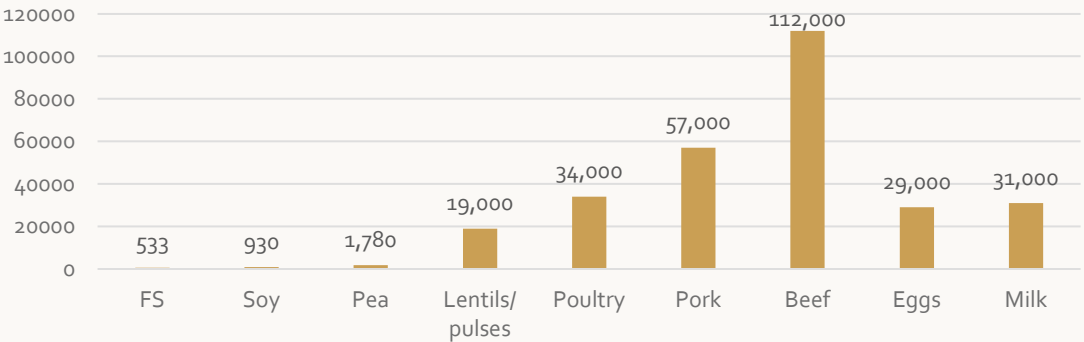
**0**  
Methane  
emissions

**Waste**  
minimization

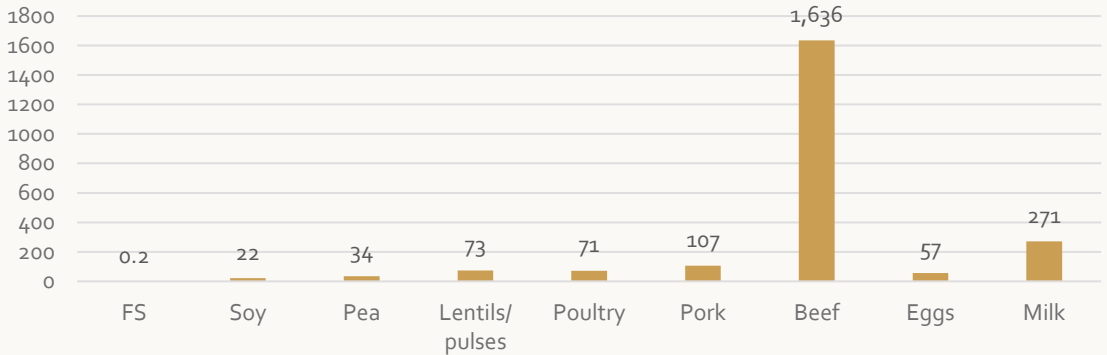
**100%**  
Cultivation in a  
closed and  
controlled  
environment

**99%**  
Less water  
consumption  
needed

Water usage (L) for producing 1kg of protein



Land use (sqm) per 1kg of protein



Mekonnen, M.M. and Hoekstra, A.Y. (2012) , A Global Assessment of the Water Footprint of Farm Animal Products, Ecosystems  
 Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of farm animals and animal products, Value of Water Research Report Series No. 48, UNESCO-IHE, Delft, the Netherlands.

Hannah Ritchie and Max Roser (2020) - "Environmental Impacts of Food Production". Published online at OurWorldInData.org. Retrieved from: '<https://ourworldindata.org/environmental-impacts-of-food>' [Online Resource]  
 Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science, 360(6392), 987-992.



# MUCH BETTER THAN PLANT BASED PROTEIN

Rich in  
**Minerals:**  
Iron, Calcium,  
Magnesium and  
Zinc

Contains all  
essential  
**Amino  
Acids**

**Cholesterol  
Free**

Contains  
**Omega 7**  
fatty acid and  
dietary fibers

**Exceeds**  
animal protein in  
its nutritional  
values

	Soy protein	Pea protein	Whey protein	Fruit fly larvae protein
Energy (Kcal)	328	455	385	<b>380</b>
% Protein	64	75	67	<b>65</b>
Cholesterol (mg/100 gram)	ND	ND	205	<b>2&gt;</b>
% Fat	0.5	9	5	<b>16</b>
Calcium (mg/100 gram)	363	136	256	<b>700</b>
Iron (mg/100 gram)	11	23	0.9	<b>25</b>
Magnesium	140	ND	180	<b>1,700</b>

# 1 COW IN 1 SQM IN 1 MONTH

The lifespan of the larva is **7 days**

Body mass  
**Multiplies by 250 in 7 days**  
In comparison, beef multiplies by 10 in one year

Exponential growth:  
**300-350 offspring per female**

Year-round continuous production process.  
**With no seasonal constraints**

Highly efficient production process, **100% utilization of the larvae**, residues processed into feed product



We are able to produce a quantity equal to 300-400 kg of beef in:  
**1 square meter every month!**

# FOCUS ON ESG



## Environmental

- ✓ Water saving
- ✓ Land saving
- ✓ Carbon and Methane emission reduction
- ✓ Closed and fully control on production area
- ✓ Minimal waste



## Social

- ✓ Future food security solution in third world country
- ✓ High employment standards in third world country
- ✓ Production of healthy ingredients
- ✓ Focus on diversity and inclusion



## Governance

- ✓ Public company standards
- ✓ Stakeholder engagements
- ✓ Board diversity and structure



# PRODUCTION FACILITY COMPLETED IN LESS THAN A YEAR!

## MILESTONES ACHIEVED SINCE THE IPO: INFRASTRUCTURE



Flying Spark's  
production facility -  
7,000 sqm



# STRATEGIC PARTNERS & CUSTOMERS

## MILESTONES ACHIEVED SINCE THE IPO: COMMERCIAL





FLYING SPARK

# INVESTORS BELIEVE IN INSECT PROTEIN



Establishment of a third plant in France (following France and Holland). Development and production of alternative food produced from mealworms



Establishment of a third plant in the USA (following two in France). Development and production of alternative protein and oil produced from black soldier fly larvae



First plant established in France in 2021. Development and production of alternative protein produced from mealworm and crickets



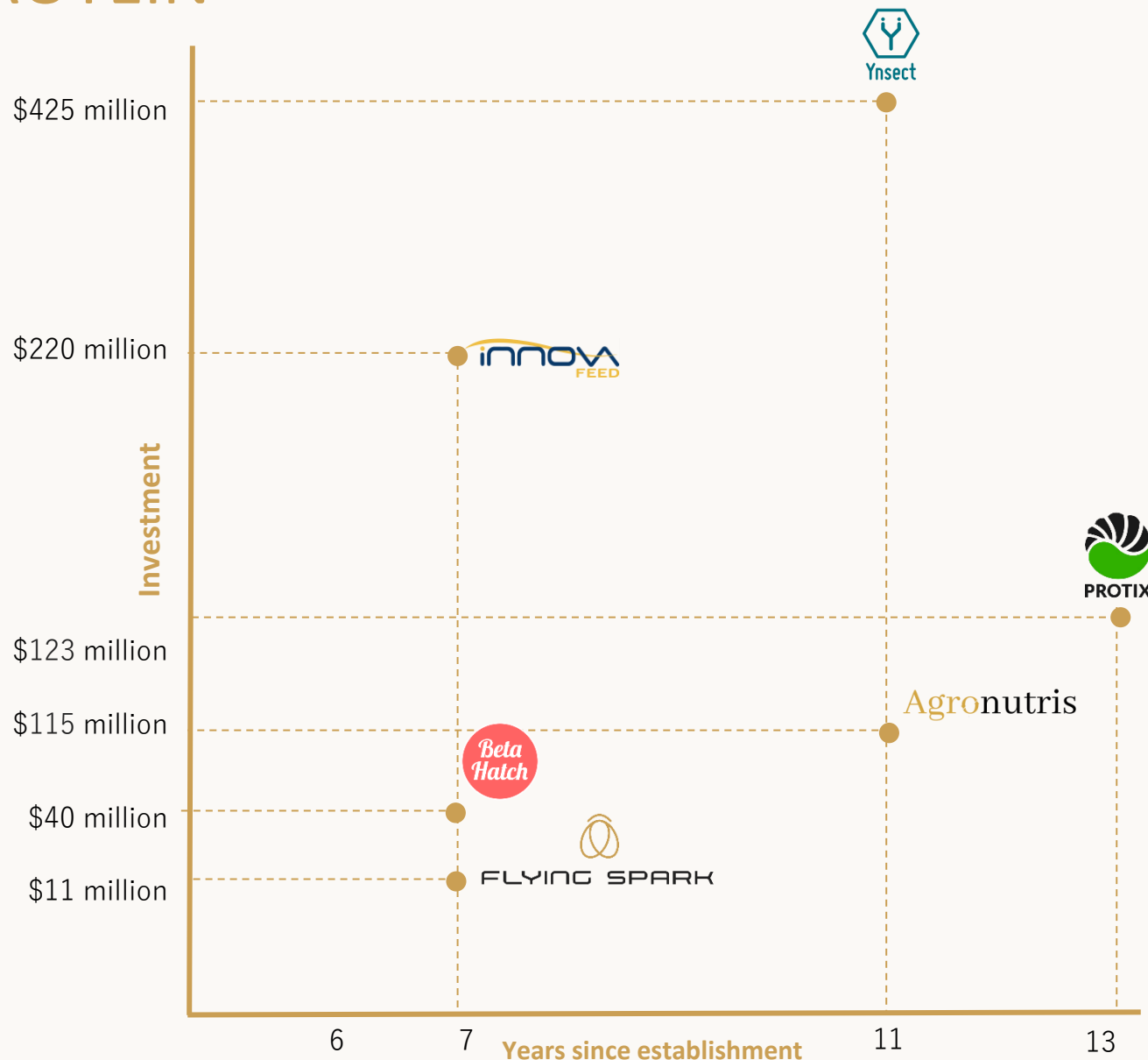
First plant established in Holland in 2019. Development and production of alternative protein and oil produced from black soldier fly larvae.



First plant established in the USA. Development and production of alternative protein produced from mealworms.



First plant established in Thailand. Development and production of alternative protein produced from fruit fly larvae.  
**The Company is in a preliminary stage compared to the benchmark - establishment of its first production plant**



\*Investment figures source: Crunchbase.com



# LEADING STRATEGIC INVESTORS



- World's largest tuna and seafood products manufacturer (about 15% global market share)
- Headquartered in Thailand, deployed globally
- OEM pet food manufacturer for global brands including Nestle Purina, Mars and others
- The protein alternatives field is in the core of the company's strategy



- Strauss Group is among the largest food manufacturers in Israel
- Strong global presence and a global leader in food innovation
- Produces dairy products, snacks, spreads, coffee, water technologies, and more
- Among the world's leading Hummus producers (together with PepsiCo)

# PATENTS

## Material Patent

Patent applications have been submitted in 11 countries:  
China, EU, USA, Japan,  
Thailand, South Korea,  
Indonesia, Malaysia, India,  
Mexico and Israel

## Aquaculture patents

Following a joint research, 3 patents in the fish feeding space have been submitted, in collaboration with Sumitomo Chemical



# OVERVIEW OF THE COMPANY'S STRATEGY 2022-2024

## MULTIPLE REVENUE CHANNELS:

AQUACULTURE | PET FOOD | COSMETICS | HUMAN FOOD





# COMPANY'S STRATEGY MAIN KPI'S

Main KPI's	2022 YTG	2023	2024-2026
<b>Production facilities</b>	Phetchaburi Thailand	Phetchaburi Thailand	Phetchaburi Thailand + Establishment of new facility during the years
<b>Maximum capacity (Ton) Premium Protein Powder / Oil</b>	Up to 100 / 40	Up to 1,000 / 400	Company's target is reaching up to 10,000 based on new factory establishment
<b>Gross Margin</b>	Negative	Positive	Reaching over 40%
<b>OCF</b>	Negative	Negative	Moving to positive during the period
<b>Expected CAPEX for capacity increase</b>	\$1M	\$4-5M	New factory significant investment
<b>Use of proceeds of future funds raise</b>	<ul style="list-style-type: none"> <li>Facility launch</li> <li>Sales team expansion</li> <li>CAPEX</li> <li>R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>Facility expansion (CAPEX)</li> <li>Business development</li> <li>Working Capital</li> <li>R&amp;D</li> </ul>	<ul style="list-style-type: none"> <li>Facility expansion</li> <li>New production site initiation</li> <li>Working Capital</li> </ul>

\*For each 1 ton of premium protein, 13 ton aquaculture (dietary residues) will be produced. 1 Ton of premium protein represents 15k-20k USD (based on mix) potential income for all products (Premium protein, oil and aquaculture feed)

\*\* The plan is based on additional future fund (via shelf offering report and/or private placement) raising ; 2022-2023 total fund raise needed estimated at \$10-15M and pending BOD approval for each milestone execution

# GO-TO-MARKET STRATEGY 2022- 2024

## Aquaculture industry



### Focus on APAC Market during 2022-2023:

- Sumitomo Chemical – Flying Spark's partners with GTM strategy in APAC
- Showa Kosan – Flying Spark's distributor in Japan
- Several commercial pilots to be launched in 2023

## Pet food industry



### Focus on APAC Market during 2022-2023:

- Collaboration with Thai Union Pet Care division – MOU for 20 tons signed and will be supplied in 2023.
- Showa Kosan – Product distribution in Japan
- Ongoing discussions with pet food manufacturers and retailers

## Oil for the cosmetics industry



### Focus on Thai Market following by APAC during 2022-2023:

- Joint venture with Garguar Labs (OEM cosmetics manufacturer) and Head100 (top tier branding and marketing agency) 2022-commercial pilot for anti-aging product, 2023 sales growth expected
- Ongoing discussions with leading cosmetics customers

## Global protein market



### Focus on APAC market and following by Western markets during 2023-2024:

- Flying Spark will start building its customers funnel in parallel to the FDA approval process which estimated to be completed in H1-2024

# FEEDING THE WORLD WITHOUT CONSUMING THE EARTH

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