Quick Scan: Alternative Proteins in the Netherlands

Insights to support Netherlands (NL) - Republic of Korea (ROK) cooperation on alternative proteins: technologies, trends, and strategic opportunities

September 2025, L. Pouvreau, H.B. Axmann

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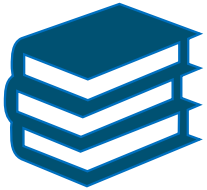
1. Methodology

Methodology: Leveraging expertise for a focused Quick Scan

The insights presented in this report are the result of a focused and expert-driven methodology, grounded in WFBR's internal knowledge and supplemented by targeted external input:

1. **WFBR's Deep Internal Expertise:** The study draws on WFBR's extensive, ongoing work in alternative proteins, and on its broader expertise in guiding food system transitions and driving international innovation.



2. **Strategic Desk Research:** Key insights were synthesized from recent and relevant high-level reports, providing contextual understanding of developments in the alternative protein space.

3. **Targeted Expert Interviews:** Six qualitative interviews with key stakeholders were conducted to validate findings and enrich the analysis with field-based perspectives.

This combined approach forms the foundation for all findings and conclusions presented in the report.

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2. Introduction

Background & Purpose

- Korea is exploring collaboration with the Netherlands on alternative proteins
- The Netherlands is recognized globally for food innovation
- Purpose of this study: Provide strategic insights into the Dutch alternative protein landscape to facilitate strengthened cooperation between Korea and the Netherlands.

Study focus across three key segments

Novel protein sources (e.g. pulses, microbial biomass)

Cultivated (hybrid) meat

Plant-based meat & dairy alternatives

Korean priorities areas

1. Plant based meat & dairy alternatives
2. Novel protein sources
3. Cultivated meat

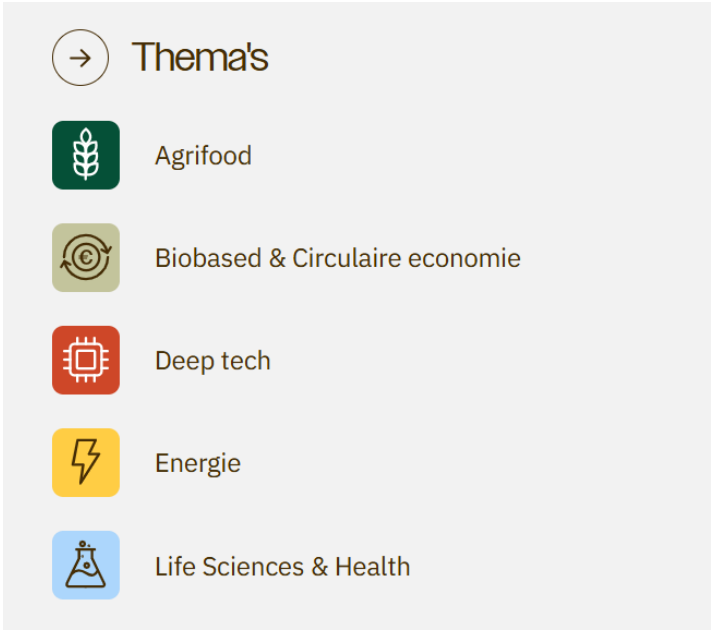
3. Overview of the Dutch alternative protein ecosystem

Content

- Development and investment organisations
- Building ecosystems and support to startups
- Trends in protein transition 2025-2030
- Challenges and Opportunities for the Future
- Ecosystem Building & Networking: *Potential opportunities for collaboration*
- Infrastructure & Scale-up Facilities: *Potential opportunities for collaboration*
- Regulatory Framework & Policies: *Potential opportunities for collaboration*

Development and investment organisations

- Support companies interested in investing in The Netherlands, by making connection between relevant partners, by providing funding (per provinces, e.g. OostNL, or national, e.g. InvestNL)
- Themes (right side of the screen)
- Examples in agrifood:
  - In fermentation (Link)
  - In upscaling for Precision fermentation (Link)
  - In cultivated meat (Link)



https://www.invest-nl.nl/nl
https://oostnl.nl/en

NL: A front runner in alternative proteins

- Interrelated actors from the public and private sectors, whereby collaboration and partnerships are key to success. Over 250 companies are active in the sector. The Dutch Protein Shift ecosystem counts over 55 collaborative initiatives.
- Strategic goals of the National Protein Strategy (NES):
  - Increase cultivation of protein crops
  - Processing into protein ingredients for food and feed (incl. mycoproteins and cultivated meat)
  - Valorisation of side streams
  - Increase the share of plant-based proteins in consumer diets
  - **NES as key enabler within the Dutch protein ecosystem:**
    - Aligns public and private actors
    - Unlocks targeted funding and investment
    - Supports innovation and market legitimacy
    - Lays groundwork for future European food regulation
- The Dutch alternative protein market is growing, with strong retail presence and product diversification. Global figures show a 5% increase in retail sales of plant-based alternatives, with Europe leading growth (Link)

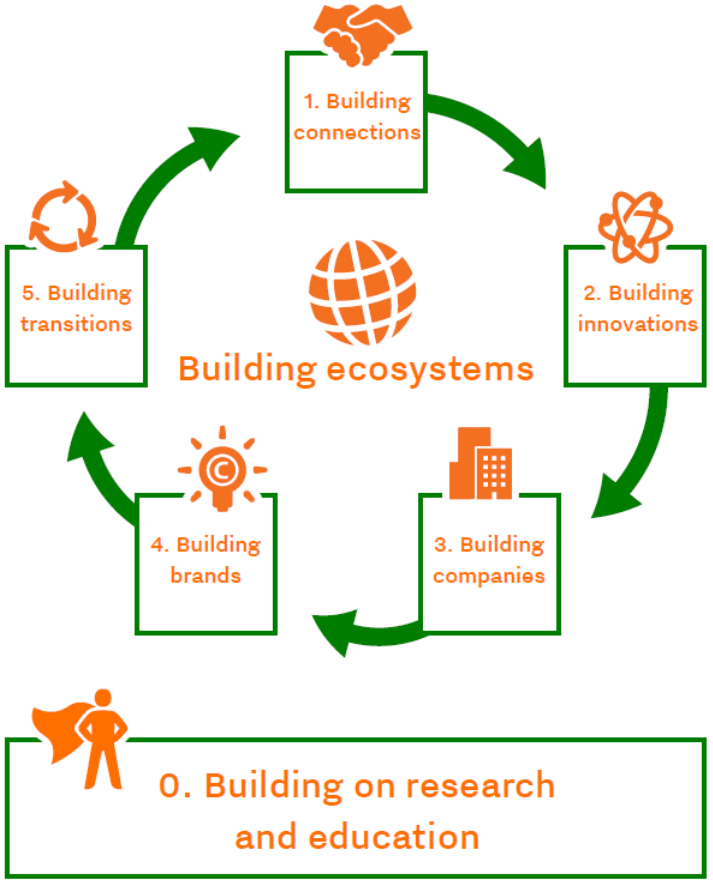
A depiction of the strong Dutch agrifood ecosystem, as captured by ScaleUpNation (note: not specific to alternative proteins).

Future Protein NL report

State of alternative proteins, GFI report

Way of working of protein ecosystems

- Five main factors, as illustrated by the figure on the right, have contributed to the leading position of the Netherlands. These factors all have a strong foundation of high-quality education (WUR, TU Delft, Utrecht University, Maastricht University,….)



[Future Protein NL report]

Building the Ecosystem:

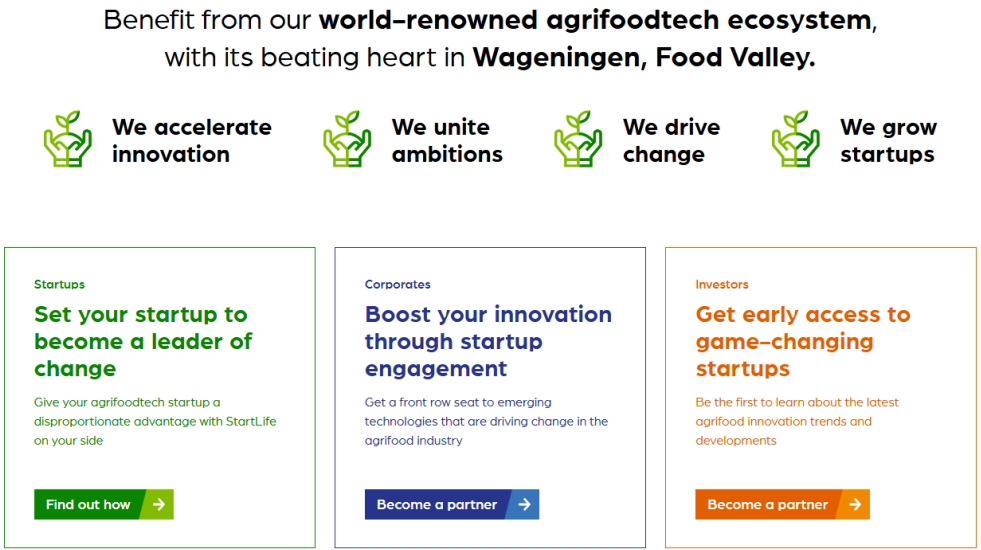
Food Valley's Role in Agrifood Innovation

- Food Valley is an independent, objective non-profit organization and is the bridge between ideas and ambitions for the future and the reality of practice. From idea to implementation, Food valley ecosystems bring all the necessary players together and ensure that we now collectively move towards a more sustainable and fairer food system.
- Connection between company and Universities/ research institutes. The organization is rooted in Wageningen, which is considered as the center for agrifood innovation.
- Four main challenges are envisaged (Link, viewed 07/08/2025)
    - Prevent Climate change → Reducing the impact of the supply chain on climate change
    - Improve health
    - Reduce waste
    - Create a fair system
- Link to Investment platform (InvestNL, OostNL)

https://foodvalley.nl/en/foodvalley-communities/
https://foodvalley.nl/en/who-we-are/

StartLife: support for startups

- StartLife: Supports early-stage foodtech startups with funding, mentoring, and access to the agrifood innovation ecosystem (https://start-life.nl, viewed 07/08/2025)



A strong focus on research

- The Netherlands is an international figurehead in agri-food related knowledge. This ensures a highly skilled workforce. Furthermore, there are many research facilities available for companies looking to test, trial, and upscale the production of their innovations. An overview is shown below (in alphabetical order).

World-class universities in agrifood

Amongst the leading universities are:

- Aeres University of Applied Sciences (Almere)
- Delft University of Technology
- Eindhoven University of Technology
- HAS University of Applied Sciences (Den Bosch)
- Leiden University
- Maastricht University
- University of Groningen
- Utrecht University
- Wageningen University and Research (WUR)

Research centers & institutes

- Bioprocess Pilot Facility
- Food Application Centre for Technology
- Food Tech Brainport
- Green Protein Excellence Center
- INNOLAB
- Louis Bolk Institute
- NIZO
- Planet B.io
- Susinchain
- The Protein Competence Centre

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Future Protein NL report

Trends in protein transition 2025-2030

A. Beyond protein
B. Corporate Sustainability reporting Directive (CSRD) Plants → Align their protein innovation with ESG goals
C. Easy Peasy: Demand for convenient, quick, and easy-to-cook protein solutions.
D. Blended Plantification: fully or partly plant based
E. Generative ProtAIn: Artificial intelligence (AI), including robotization and high-tech
F. Fermenting the future of Protein
G. Dairy's more than meat → More focus on alternative or blended dairy products
H. Healthier Plant Forward

https://foodvalley.nl/en/protein-transition-trends-2025-2030-from-insights-to-opportunities/

Challenges and Opportunities for the Future

- Key Challenges
  - Taste and texture perception of plant-based food products compared to animal counterpart.
  - High cost and resource intensity of extraction and processing methods.
  - Difficulty scaling up production with low environmental footprint.
  - Regulatory complexity and consumer acceptance in novel protein areas (Eiwitmonitor 2024. https://edepot.wur.nl/690329).
- Future Opportunities in NL
  - AI-driven optimization of flavour, texture, and formulation.
  - Fermentation-enhanced functionality of proteins and food products.
  - Development of hybrid products combining novel protein sources (plant, aquatic, microbial biomass, cultivated meat and fat) and animal proteins.
  - Circular valorization of agricultural and industrial side streams and/or co-products (State of alternative proteins (2024). GFI).

Ecosystem Building & Networking:

Potential opportunities for collaboration

- Matchmaking and Knowledge Exchange
  - NL Strength: Ecosystem facilitators (Foodvalley, Wageningen University & Research, Bridge2Food), international matchmaking capabilities
  - ROK Opportunity: Strong demand for international partnerships and technology integration
  - Potential collaboration:
    - Structured bilateral matchmaking events and innovation missions, fostering direct partnerships and market opportunities for Dutch companies
    - Regular joint workshops and innovation summits focused on relevant topics for each side (e.g. fermentation and cultivated meat technologies)
- Cross-border Public-Private Partnerships (PPPs) and EU projects
  - NL Strength: Proven track record in forming effective PPPs
  - ROK Opportunity: Government interest and funding available for strategic sectors
  - Potential collaboration:
    - Jointly funded Dutch-Korean PPPs focusing on strategic innovation themes (e.g. fermentation)
    - Coordinated ecosystem development programs to facilitate bilateral partnerships

Infrastructure & Scale-up Facilities:

Potential opportunities for collaboration

- Shared R&D and Pilot Facilities
  - NL Strength: Strong ecosystem and shared initiatives for shared infrastructure (e.g. Food Valley, Shared facilities of WUR Link).
  - ROK Opportunity: Korean startups needing access to advanced pilot-scale infrastructure to accelerate product development.
  - Potential collaboration:
    - Korean companies conducting scale-up trials at Dutch facilities
    - Dutch technology providers establishing joint ventures or facility-sharing agreements in Korea
- Production Scale-up & Factory Financing
  - NL Strength: Invest-NL expertise in blended financing instruments, with a focus on high tech innovation
  - ROK Opportunity: Korean companies needing capital and know-how for large-scale production facilities.
  - Potential collaboration: Advisory role of Dutch financial institutions and innovation organizations in Korean scale-up initiatives.

Regulatory Framework & Policies:

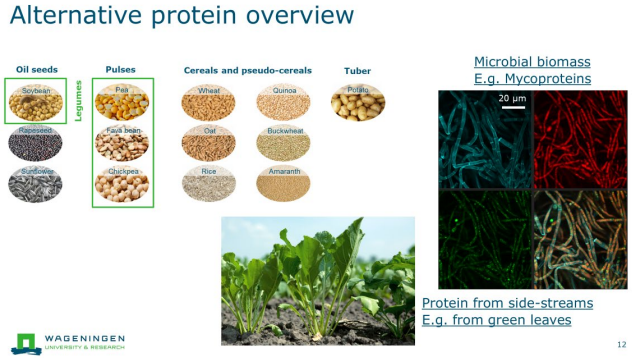
Potential opportunities for collaboration

- Regulatory Sandbox for Novel Foods
  - NL: Sandbox for cultivated meat until end 2026 and novel food approval (EU) slow.
  - ROK: Structured regulatory pathway for cultivated meat since 2022 (MFDS); Non-conventional food ingredients requires market safety evaluation and approval → Some companies awaiting approval.
  - Suggestions for concrete collaboration:
    - Dutch startups exploring Korean market entry via established approval route.
    - Joint advocacy for harmonized international standards.
- Knowledge Exchange & Regulatory Guidance
  - NL: Expertise in navigating the EU's complex novel-food regulatory system, including Invest-NL's framework development to support responsible scaling of food innovations (https://www.invest-nl.nl/nl, viewed 07/08/2025)
  - ROK: Interest in understanding international regulatory environments and aligning standards.
  - Potential collaboration:
    - Dutch experts providing regulatory advisory services to Korean firms entering EU markets.
    - Exchange programs for regulatory bodies and researchers to align regulatory frameworks beneficially for both countries.

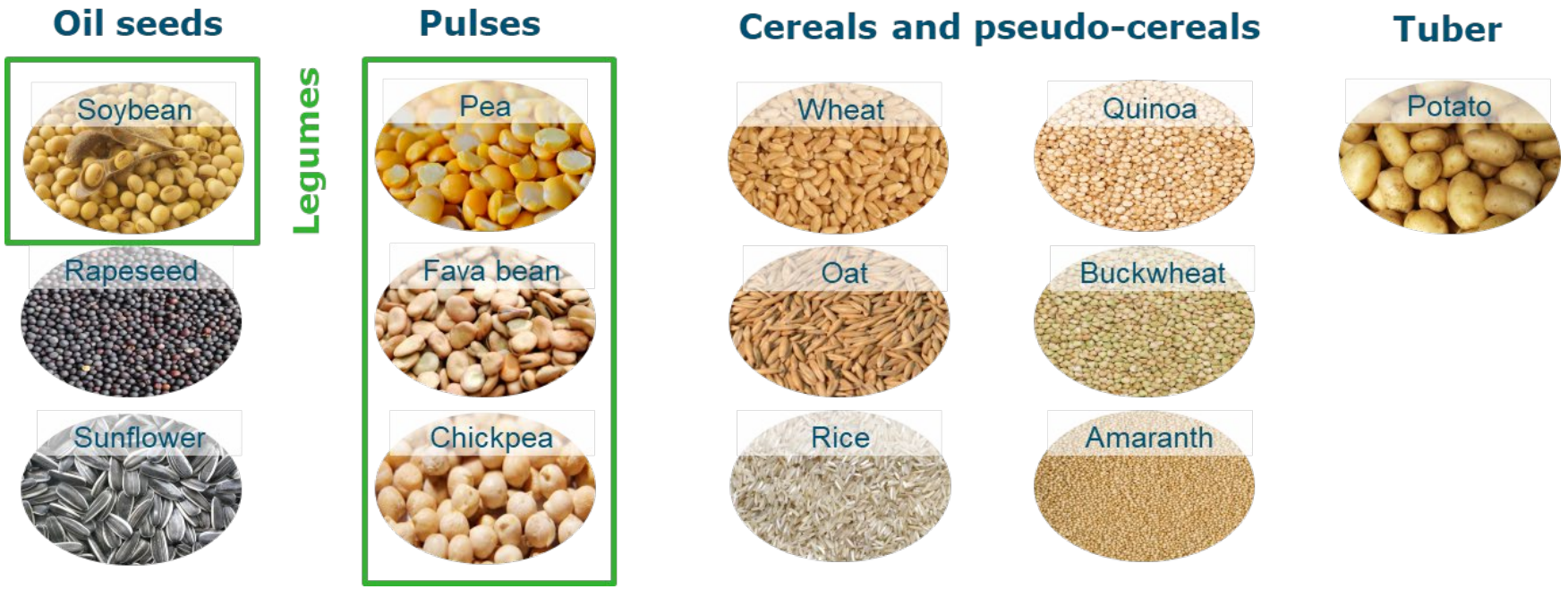
4. Novel protein sources

Novel proteins sources

- Protein from land
- Protein from side streams
- Protein from aquatic sources
- Protein from microbial biomass, including microalgae, fungi
    - Biomass or ingredients derived from
- Precision fermentation

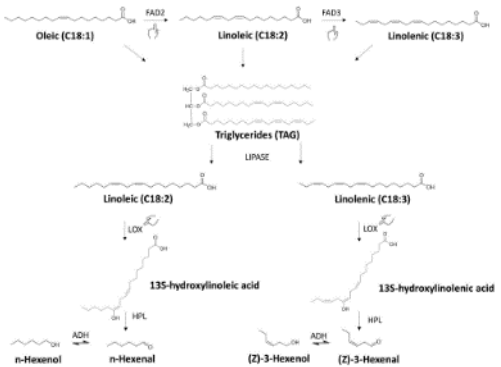


Protein from land: plant protein sources



Improving taste of faba bean by breeding

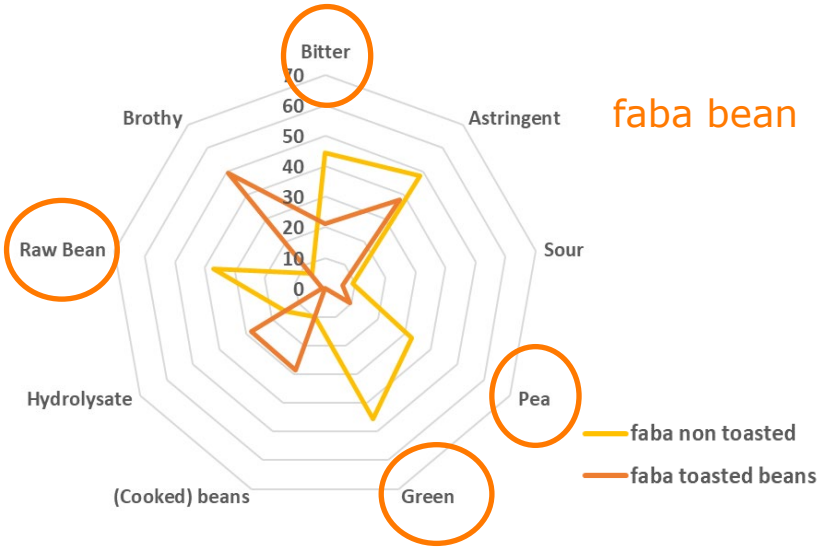
- Faba bean:
  - Protein crop with relatively high (protein) yield in NW Europe (up to 8 tonnes/ha, 29% protein on dry matter basis)
  - Valuable protein for using in meat analogues
  - Off-flavours: beany aroma and bitter taste
    - Lipid oxidation compounds,
    - polyphenols, saponin, tannin
- Solution:
  - Breeding for reduced lipid oxidation and polyphenol synthesis

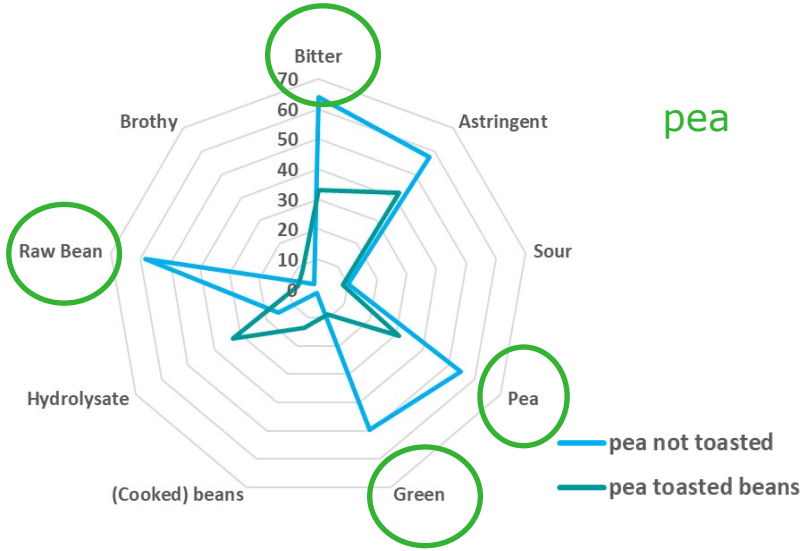


Biosynthesis of lipid-derived off flavours. Lippolis et al, 2023, DOI 10.3389/fpls.2023.1286803

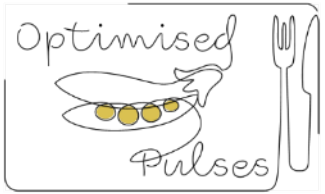
Toasting as a mean to reduce off-flavour

Toasting conditions: Super heated steam, 120°C, 30 min





- These results correlated with a decrease volatile compounds, such as aldehyde compounds (e.g. hexanal)



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Knowledge gaps in protein extraction from legumes

- Dry and wet fractionation:
  - Understanding seed morphology to improve the design of milling equipment to increase efficiency.
  - New technology (air classification & electrostatic separation) to increase protein purity.
  - Plant breeding for increased functionality and optimised flavour.
  - Pre-treatment of the seeds before milling (e.g. toasting, soaking, sprouting) of the seeds to improve milling efficiency and flavour perception.
  - Fermentation for improved flavour
  - Combination between dry and wet fractionation

- TRL: Depends on crops
  - Legumes: Crops optimised for yield or protein content but not for flavour and functionality

Novel protein sources protein extraction and traditional food products: *Potential collaboration*

- Dry and wet fractionation:
  - Understanding seed morphology to improve the design of milling equipment to increase efficiency.
  - **New technology (air classification & electrostatic separation) to increase protein purity → Combined with pre-treatment for improved flavour**
  - **Plant breeding for increased functionality and optimised flavour.**
  - Pre-treatment of the seeds before milling (e.g. toasting, soaking, sprouting) of the seeds to improve milling efficiency and flavour perception.
  - **Fermentation for improved flavour → Flavour AI (Link)**
    - **Leveraging Korea expertise in fermentation**
  - **Combination between dry and wet fractionation**

- Collaboration on traditional soy-based food products (e.g. tofu and fermented soy products) and explore the new mushroom species

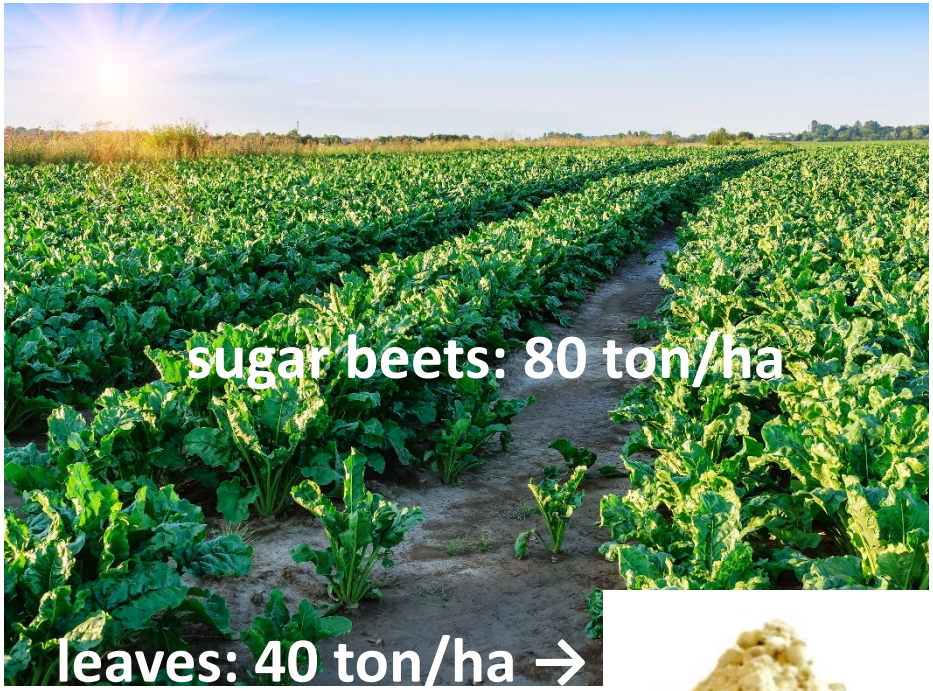
Protein from side streams

Protein recovery from agricultural side streams:

- increases European supply,
- strengthens the economic basis for farming,
- provides unique proteins with functional and nutritional benefits.

Examples:

- Potato proteins are already available.
- Sugar beet leaf proteins are in development.



Novel protein sources protein from side streams: Knowledge gaps / Strength / Collaboration

- Knowledge gaps
  - Polyphenol and colour removal
  - Protein extraction efficiency

- NL strength → Patent on protein extraction from green leaves
  - TRL: 4-6 → Technology to increase the yield; cost reduction
  - New ingredients derived from leaves → Novel foods (EFSA)
  - Duckweed was recently approved as food ingredient

- Potential collaboration → Identification of potential side-streams or co-products containing proteins

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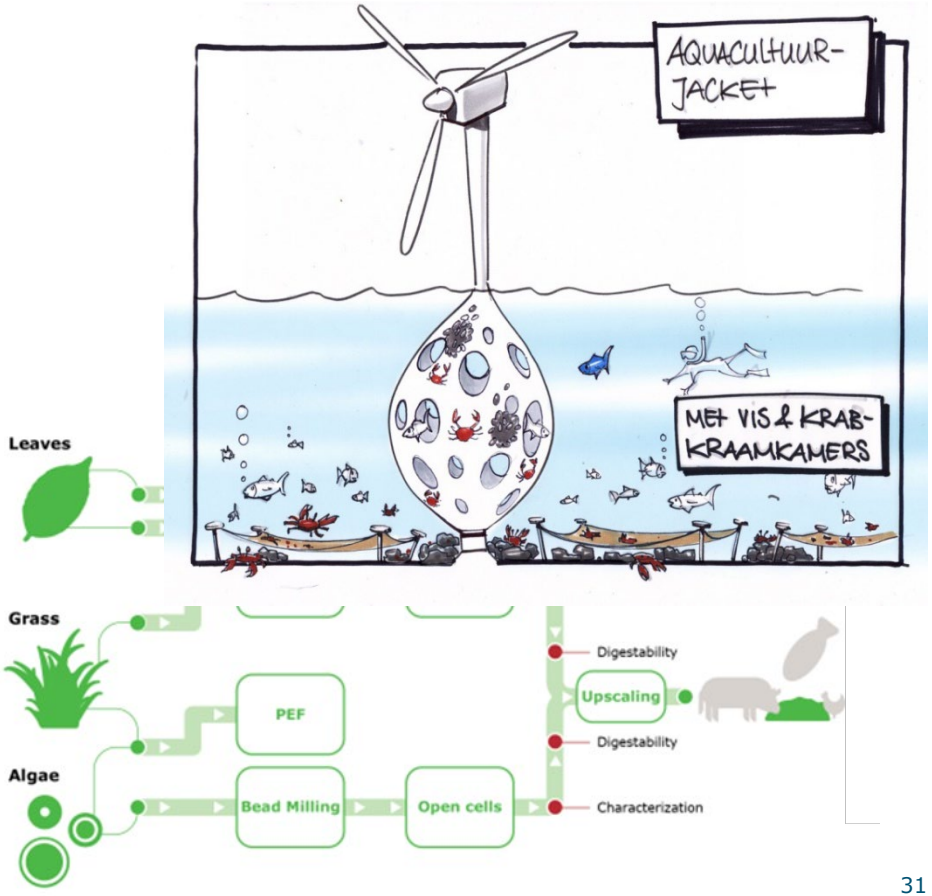
https://edepot.wur.nl/517352

Protein from aquatic sources

- The oceans cover 71% of the earth's surface but provide only 7% of our protein.
- Smart oceanic farms could combine energy and food production.

Aquatic protein crops like seaweed (e.g. laver) and microalgae (e.g. chlorella or spirulina) still require energy-intense downstream processing.

Technology breakthroughs are needed.



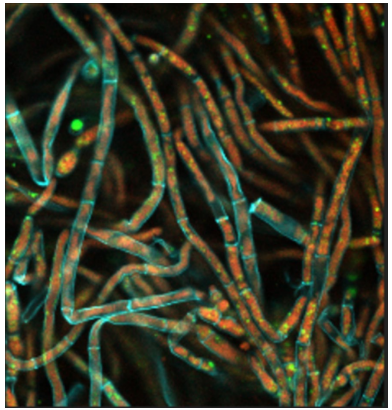
Extracted from Mansholt lecture 2019

Microbial biomass and derived ingredients

- Fungal, bacterial, and yeast protein sources can be grown on a variety of substrates and thereby decouple production from land and sea.

- Use as such or protein extracted from

Mycoproteins have an appealing fibrous texture and are already accepted by consumers



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Microbial aquatic sources, biomass and derived ingredients: *Knowledge gaps / Strength / Collaboration*

- Knowledge gaps
  - Fermentation conditions for optimal biomass for protein content
  - Biological variations in materials
  - Determine the impact of substate (C/N ratio) on functionality and nutrition and application
  - Use of side streams
  - TRL → Depending on the type of micro-organisms
- NL strength
  - Technology (e.g. Raman, NIR, UV/Vis) to monitor fermentation and prevent risk of upscaling (link)
  - High-throughput screening (link)
  - Knowledge in protein extraction from microbial biomass (link)
  - Company: Enough (mycoproteins), The Protein Brewery (Fungi), Revyve (ingredient from Brewery Spent Yeast)
- Potential collaboration
  - Leverage Korea fermentation to identify potential microorganisms
  - Technologies for land-based aquaculture (e.g. seaweed such as laver)

Precision fermentation

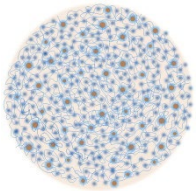
- Precision fermentation already used for producing enzymes, flavouring agents, vitamins, natural pigments, and fats.
- **Precision fermentation to produce animal free proteins for food application**
- Approved in USA and in Singapore
    - In Europe, not approved by EFSA

Ovalbumin

ONEGO bio

EVERY

Casein molecule (α, β)



STANDING OVATION

VIVICI

TurtleTree

β-lactoglobulin, lactoferrin

Precision fermentation: Knowledge gaps / Strength / Collaboration

- Knowledge gaps
  - Upscaling for improve yield, purification (to which %)
  - Food safety, nutritional value and bioavailability
  - Difference in functionality depending on the host when compared to the animal counterpart
  - TRL: 2-6 → Depending in the type of proteins

- NL strength
  - 30 years of experience in precision fermentation
  - Technology (e.g. Raman, NIR, UV/Vis) to monitor fermentation and prevent risk of upscaling (link)
  - Leveraging risk of upscaling (link); current running projects (Link; Link)
  - Mixes of plant proteins and animal free proteins
  - Upscaling facility in NL: DAB.bio (Link), Biotechnology Fermentation Factory (BFF) (link)

- Potential collaboration → Scoping of potential interest

Summary precision fermentation: Potential opportunities for collaboration

- Precision Fermentation and Single cell ingredients
  - NL Strength: Protein technology innovation and research (WUR), and market-leading fermentation companies (e.g., Those Vegan Cowboys, Enough, Revyve).
  - ROK Opportunity: Leverage Korean expertise and traditional fermentation culture to co-develop new functional proteins (tailored to Asian culinary preferences).
  - Potential collaboration:
    - Joint research & pilot projects (e.g. single cell ingredients using Korean raw materials)
    - Dutch startups supplying technology and fermentation expertise for Korean scale-up

5. Plant-based meat and dairy alternatives

Addressing barriers for meat and dairy alternatives

BREEDING | CULTIVATION | PRIMARY PROCESSING | SECONDARY PROCESSING | RETAIL & OUT of HOME | CONSUMPTION

Functional and nutritional sources of plant proteins

Price

Product quality: texture, juiciness, flavour

Healthiness

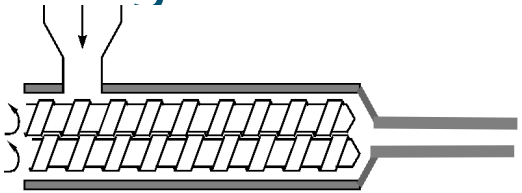
Long labels

Unfamiliarity with preparation

From ingredients to products: technologies

Technologies:

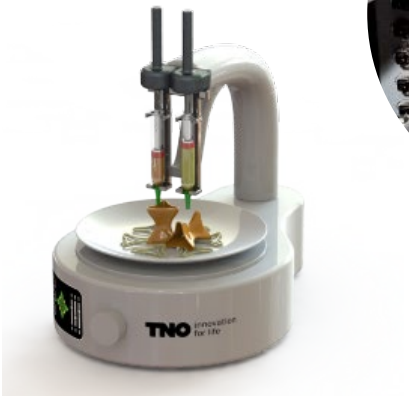
1. Mixing and forming
2. Low-moisture extrusion to create a texturized vegetable protein, followed by mixing and forming
3. High-moisture extrusion
4. Shear cell technology
5. 3D printing



Twin-screw extruder schematic

TVP made with low-moisture extrusion

Typical product from high-moisture extrusion



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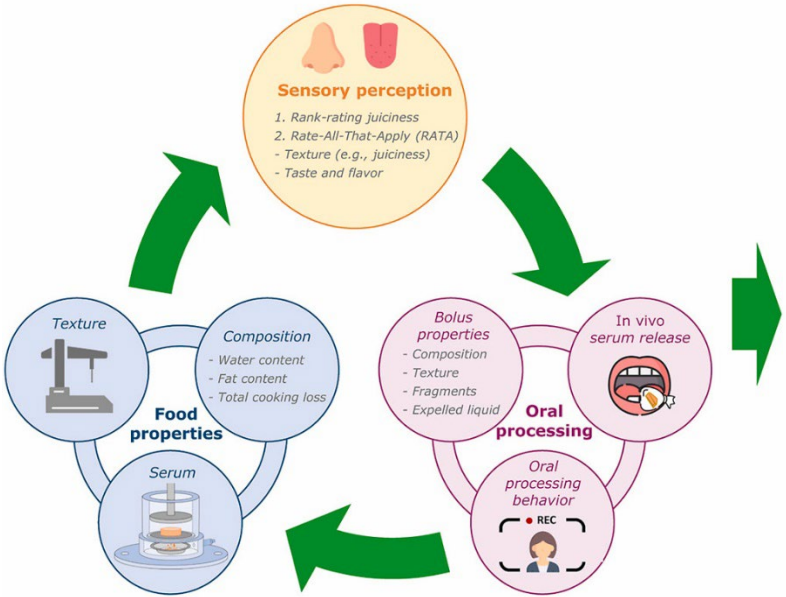
Relationships juiciness perception – food properties



- Juiciness of plant-based meat analogue and beef patties is driven by serum release.
- Juiciness is related to food properties rather than bolus properties at moment of swallowing.
- Juiciness had negligible impact on oral processing behavior and bolus properties at moment of swallowing.

ELSEVIER
Food Hydrocolloids
Volume 147, Part B, February 2024, 109443

Exploring relationships between juiciness perception, food and bolus properties of plant-based meat analogue and beef patties

Yifan Zhang [a b], Rutger Brouwer [a], Guido Sala [b], Elke Scholten [b], Markus Stieger [a c]

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Technology readiness

Technology	TRL	Scale	Company
Mixing and forming	8-9	Continuous process	-Vegetarian butcher, Vivera
Low moisture Extrusion	8-9	Continuous process; Up to 1000kg/hour	-Vegetarian butcher, Vivera -ADM
High moisture Extrusion	8-9	Continuous process; Up to 1000kg/hour	-Livekindly
Shear cell technology	6-7	Batch process	-Rival Foods
3D printing	6-7	Semi-continuous; Limited scale	-Redefined meat

- Knowledge gaps
  - Use of less refined ingredients in meat alternatives
  - Blend of protein ingredients for optimal texture and water holding of TVP
  - Pre-treatment of protein ingredients for optimal flavour and functionality
  - Use of side-stream and co-products

Plant-based meat alternatives:

Strength / Collaboration

- NL strength
  - Experience in a range of structuring technology developed in various projects (e.g.):
    - Extrusion [PlantPROMISE]
    - Structured plant-based products with scalable and economic technology [Structured]
    - 3D printing [SUS-PRINT] → one-of-a-kind protein structuring printer
  - Experience with a broad range of protein ingredient
  - Modelling of the extruder

- Potential collaboration
  - Innovation in plant-based meat specific for the Korean market
  - Fermentation for plant-based meat applications
  - Scoping of potential interest

Plant-based dairy alternatives

Solubility

Emulsifying properties

Heat stability

Gelling upon heating and acidification

Plant-based dairy alternatives:

Knowledge gaps & opportunities for collaboration

- Innovation in milling equipment for better separation
- Fermentation for the right texture and taste (and mouthfeel)
    - Translation from dairy to plant-based dairy
    - Flavour AI tool → finding the right microorganism to produce dairy and/or remove off-notes
- Applying other technologies for structuring (3D printing, extrusion)
- Preventing, mitigation of off-notes formation
    - Collaboration between plant breeding and food processing

Technology readiness

Technology	TRL	Scale	Type/Company/KI
Plant seed equipment	6-9	-Commercially available -Continuous process	-Readily available -Innovation in milling for better separation -Company: Agrifirm -KI: WUR
Dairy processing equipment, including homogenization and heating	7-9	-Commercially available -Continuous process	-NL: leading dairy production → readily available -Company: FrieslandCampina, Arla, Alpro
Structuring technology	3-6	-Translation to dairy products	-Plant-based cheese → Westland
Fermentation for plant-based	4-6	-Commercially available (soy-based)	-NL: strong knowledge in lactic acid bacteria → ongoing translation to plant-based -Alpro, FrieslandCampina
Flavouring (Mitigation, masking)	4-7	-Commercially available -No ONE solution: specific to sources and ingredient processing conditions	-Mitigation via Plant breeding and processing: WUR -Flavour house collaboration (IFF, Givaudan, DSM-Firmenich)

Plant-based dairy alternatives:

Strength / Collaboration

- NL strength
  - Experience in protein structuring
    - Clean label solutions for structuring plant-based foods (Link)
    - Mixing of plant proteins with animal-free proteins
  - Experience with a broad range of protein ingredient

- Potential collaboration
  - Ongoing collaboration with Korean company CJ CheilJedang on Clean label solutions for plant-based foods
  - Scoping of potential interest

Summary plant-based dairy alternatives:

Potential opportunities for collaboration

- Hybrid food Products
  - NL Strength: Advanced food technology for blending plant-based with ither meat, dairy proteins and single cell ingredients
  - ROK Opportunity: High consumer receptiveness to health-focused hybrid products that incorporate traditional Korean ingredients
  - Potential collaboration:
    - Joint R&D and consumer tasting programs to co-develop hybrid food products tailored to the Korean market

Plant-based foods trends

- Willingness of the Dutch consumer to be flexitarian, but looking for **higher quality product → Taste & texture is key**, followed by affordability
- Plant-based meat companies are looking for new directions, such as Vivera that launched the high protein bite and different kind of tofu
- Plant-based cheese companies' innovation on protein enrichment (>8%) and taste enhancement
- For both product categories, hybrid solutions are envisaged
    - Retailers (e.g. Lidl) launched hybrid minced meat

- Despite increased availability, Dutch consumers still consume mostly animal-based proteins; Research in consumer behavior towards plant-based and hybrid food products (Eiwitmonitor 2024, https://edepot.wur.nl/690329). Increase in product quality and offerings as well as increase visibility and promotion is needed.

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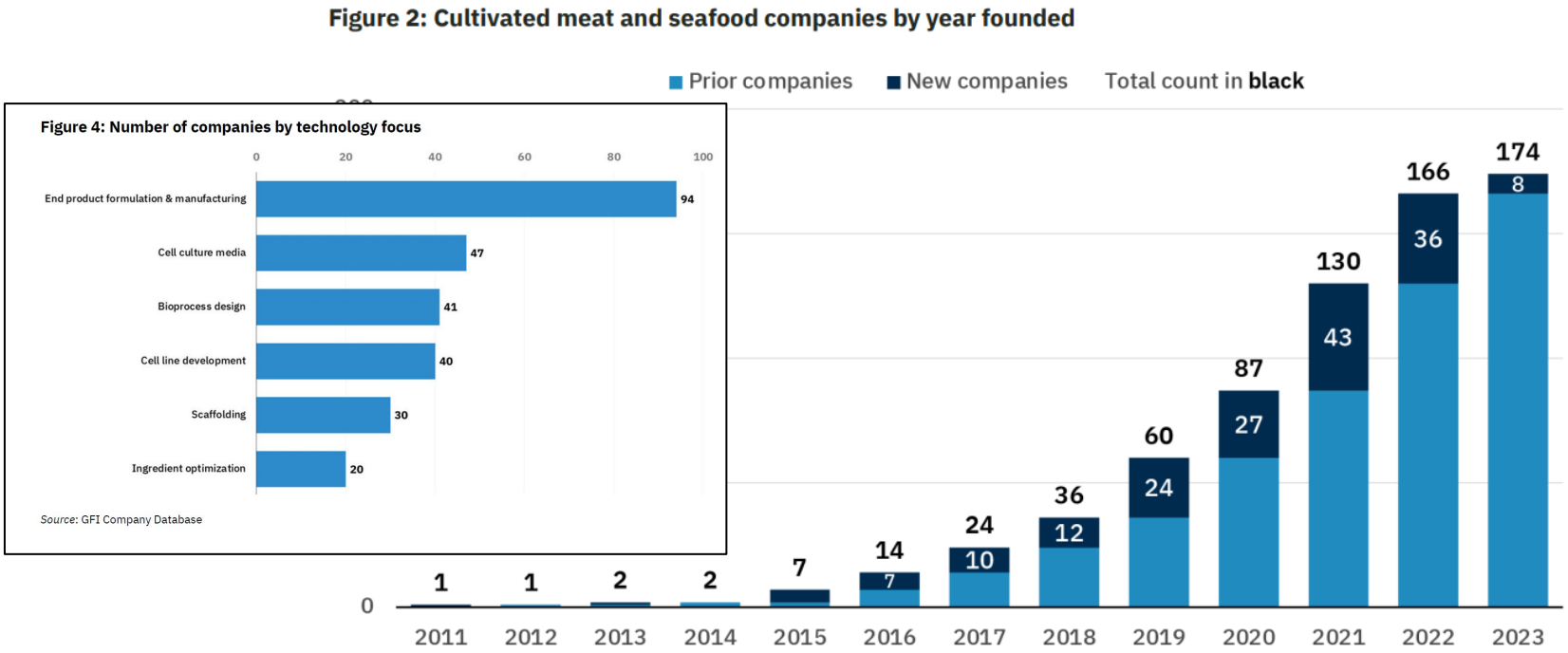
6. Cultivated (hybrid) meat

Cultivated Meat companies worldwide

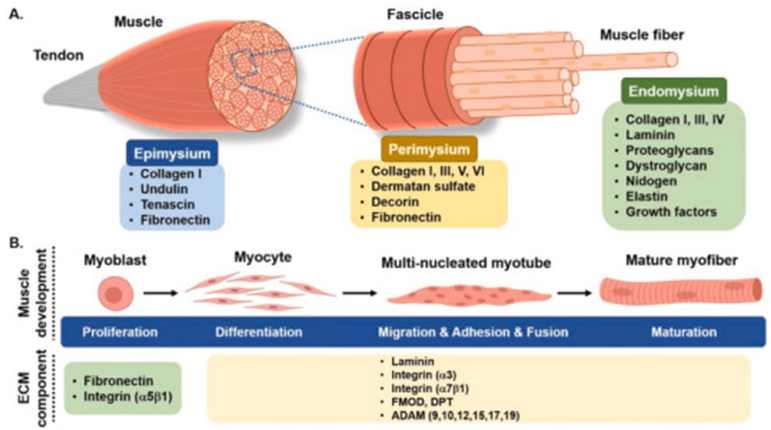


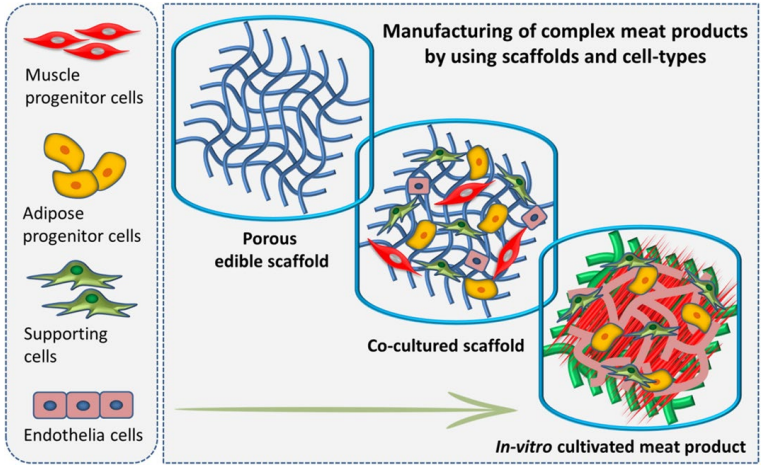
- https://gfi.org/science/the-science-of-cultivated-meat/
- https://www.sciencedirect.com/science/article/pii/S2666154324003442
- https://www.tandfonline.com/doi/full/10.1080/10408398.2022.2132206?scroll=top&needAccess=true#d1e347

Innovation areas

- Proliferation and differentiation of cells (Batch or continuous process) → Scalability
- Serum substitute (animal serum → high cost)
- Scaffolding (Natural biopolymer)
- Microcarriers (Edible microcarrier, no need to remove → Plant)
- The TRL vary between each steps but in average TRL 1-3, with scalability and cost in the centre

- Blended products between plant and meat cells (muscles or fat cells)





- Report on sustainability of Cultivated meat
- https://gfi.org/science/the-science-of-cultivated-meat/
- https://www.sciencedirect.com/science/article/pii/S2666154324003442
- https://www.tandfonline.com/doi/full/10.1080/10408398.2022.2132206?scroll=top&needAccess=true#d1e347

Ongoing collaboration between ROK and NL

- Four years collaboration on cultivated meat and sea food
- Undertake research to address the following challenges:
  - High production costs and limited scalability
  - Need for cheaper media formulation and improved cell lines
  - Financial impact of different bioprocess and technology improvements

- Other synergistic activities including tasting
  - NL: Only country in Europe where cultivated meat can be tasted (until end 2026)

Cultivated (hybrid) meat: ROK investment in cultivated meat and seafood

- Creation of a special zone designed for the development of cultivated foods, which will exempt companies from certain regulatory hurdles (link)
- Centre Dedicated to Cultivated Meat, With $10M in Public Investment (link)

- High potential for collaboration between ROK and NL to leverage expertise from both side and regulatory status

Summary cultivated (hybrid) meat:

Potential opportunities for collaboration

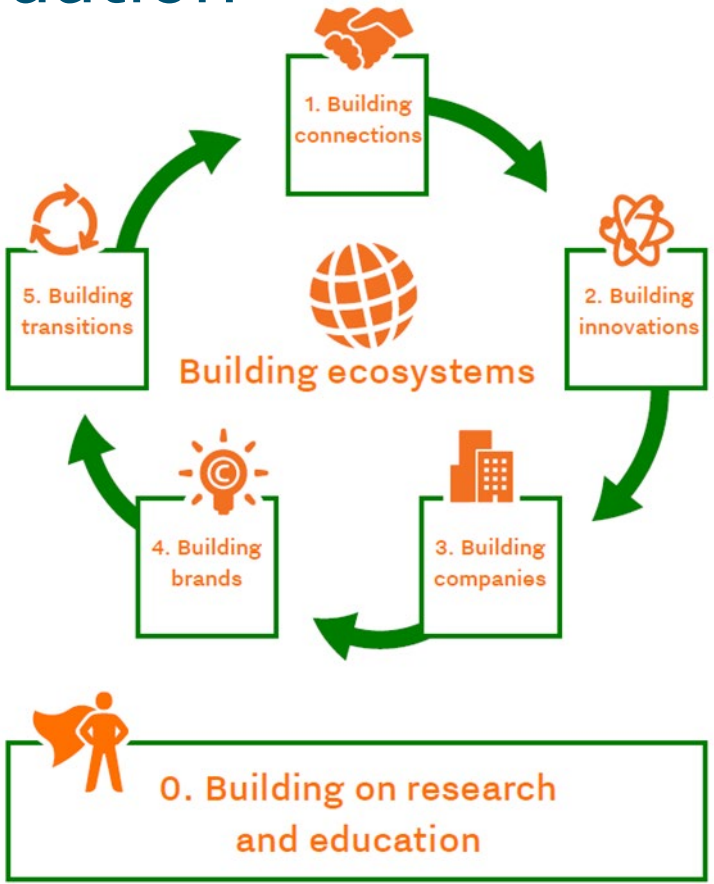
- NL Strength:
  - Strong R&D leadership in cultured meat technology (e.g., Mosa Meat, Meatable).
  - Unique position in Europe: possibility in organizing tasting sessions with cultivated meat
  - Advanced food technology for blending plant-based with ither meat, dairy proteins and cultivated meat
- ROK Opportunity: Regulatory flexibility allowing consumer tasting and sandbox environments for cultivated meat.
- Potential collaboration:
  - Dutch cultivated meat companies testing and refining prototypes in Korean regulatory sandbox pilots.
  - Co-investment and technology transfer opportunities enabling Dutch companies to use Korea as a launchpad into Asian markets
  - Knowledge exchange on consumer acceptance, product refinement, and regulatory navigation.

7. Overall strategic recommendation

Overall strategic recommendation

- Focusing collaboration on the Protein transition: blended products, precision fermentation, cultivated meat projects, and infrastructure scale-up provides the highest economic potential

- Dutch ecosystem facilitation and regulatory expertise serve as additional high-value contributions, generating substantial economic opportunities through technology licensing, equipment exports, joint ventures, and advisory services



Road mapping & Strategic Development

- Joint Strategic Roadmap for Protein and Food Transition
  - NL Strength: Early leader in protein transition strategies and diet-shift policies
  - ROK Opportunity: Rapidly evolving policy landscape with interest in strategic international collaboration
  - Potential collaboration:
    - Development of a joint NL-ROK roadmap outlining technology goals, market development, regulatory pathways, and international cooperation mechanisms
    - Dutch leadership role in advisory services, base line analysis, theory of change, scenario planning, and strategic road mapping exercises, further strengthening ROK protein transition

Annex: Collaboration models and opportunities

Overview of collaboration models: grants, PPPs, bilateral

- Public Private Partnership is a funding opportunity open to international companies
- CJ CheilJedang joined the 'Clean label solutions for structuring plant-based foods' consortium together with 10 other companies
    - CJ CheilJedang joins the campus ecosystem of the Wageningen Campus to enhance collaboration with Dutch entities, in the Protein transition

Annex: Collaboration models and opportunities

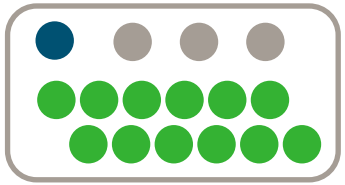
EU funding options – Horizon Europe & thematic calls

- Republic of Korea to join Horizon Europe under Transitional Arrangement (Link)
- Opportunities to join our initiatives:
    - HORIZON-CL6-2025-02-FARM2FORK-02-two-stage on “Innovating for on-farm post-harvest operations, storage, and transformation of crops into food and non-food products.”
    - HORIZON_HORIZON-CL6-2025-01-CIRCBIO-09 Unleashing the potential and advancing the impact of the digitalization/Artificial Intelligence of the climate-neutral bio-based value chains

Annex: Collaboration models and opportunities

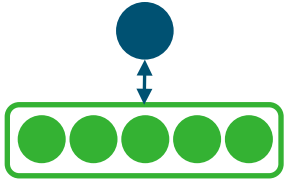
Ways to work together with WUR

SCIENCE GRANT



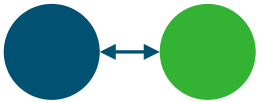
- Mostly university
- Typically >80% financed
- Low/no cash contribution
- Low partner influence level
- No IP access for companies
- Long term (typical 4Y)

PUBLIC-PRIVATE PARTNERSHIP



- Mixed university and research
- Typically 50% financed
- Partners co-finance cash/in-kind
- Partners join governance board
- License rights to foreground
- Mid-long term (2-4Y)

BILATERAL



- Mostly research
- No subsidy financing
- Partners fully finance
- Partners in the lead
- IP rights negotiable
- Short-mid term (1M – 2Y)

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WUR **Other research partners** **Industrial partner**

Annexe: Relevant Dutch Ecosystem Links

Key organisations supporting innovation and investment in the Netherlands, in food and biotech:

- https://www.invest-nl.nl/nl
- https://oostnl.nl/en
- https://foodvalley.nl/en/

Annex: Reference materials

- Future Protein NL report
- WUR report/articles
  - Pyett, S., E. de Vet, L.M. Trindade, H van Zanten, L.O. Fresco (2019). Chickpeas, crickets and chlorella: our future proteins. Wageningen University & Research. http://edepot.wur.nl/496402
  - From worthless leaves to valuable powder. https://edepot.wur.nl/517352
  - I. Gursel, M. Sturme, J. Hugenholtz, M. Bruins (2022). Review and analysis of studies on sustainability of cultured meat. https://edepot.wur.nl/563404
  - M.C. Onwezen, L. Dwyer, M.C.D. Verain, F. Kremer, J. Steketee, J. van den Puttelaar, N. Herceglić & K. Logatcheva. Eiwitmonitor 2024. https://edepot.wur.nl/690329
- GFI report:
  - Cultivated meat, seafood and ingredients (Link)
  - Fermentation for meat, seafood, eggs, dairy and ingredients (Link)
  - Plant-based meat, seafood, eggs, dairy and ingredients (Link)
  - 2024. State of the alternative proteins. A global glimpse at the state of the industry (Link)

Thank you!