



NAVIGATING MACRO-SHIFTS ACROSS THE AGRIFOOD AND HEALTH LANDSCAPE



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AGENDA

1 | **Key themes driving innovation in 2025**

2 | Opportunity and caution

3 | Outlook: Planning for uncertainty



1

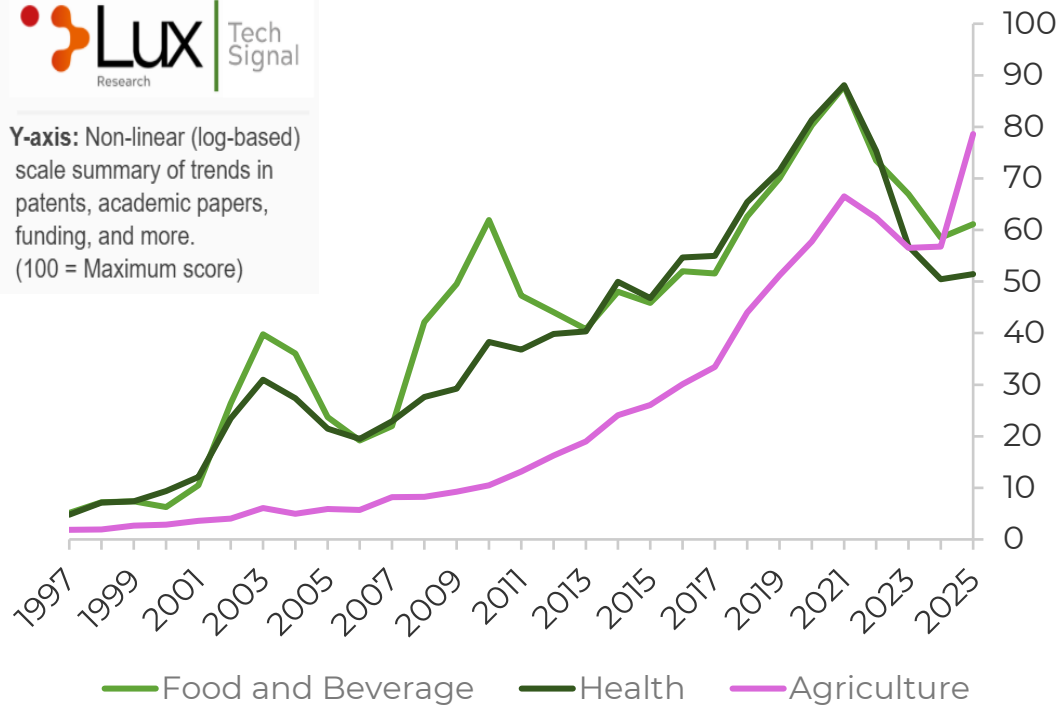
**Innovate for
impact**



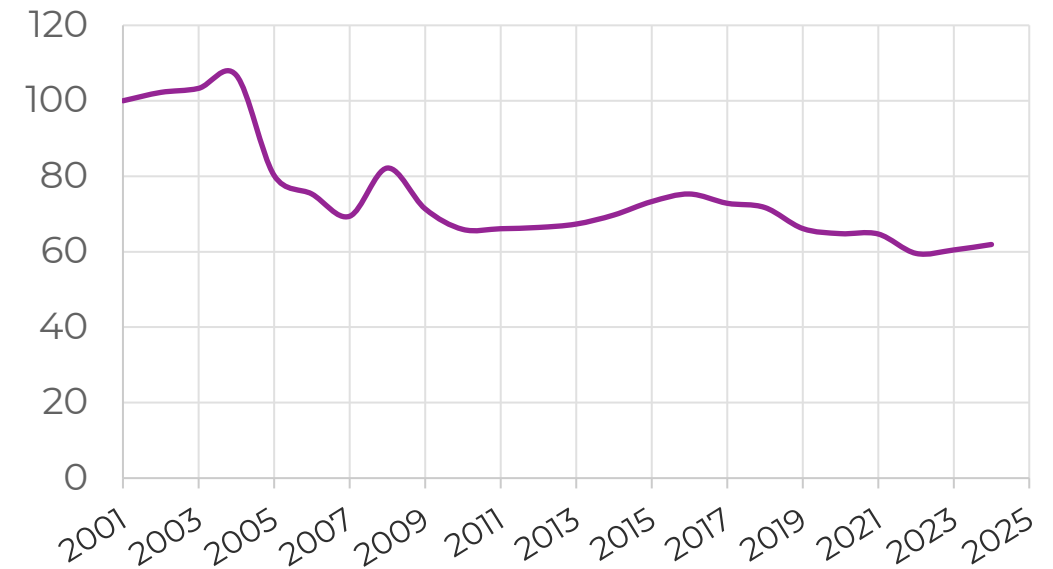
Innovate for impact



Y-axis: Non-linear (log-based)
scale summary of trends in
patents, academic papers,
funding, and more.
(100 = Maximum score)



CPG R&D Intensity Index (2001 = 100)



2

**Drive regional
strategy via policy**



AMERICAS

MAHA Struggles to Set a Clear Vision

Selective emulation of EU

Health and safety risks for children

Nutrition in the clinic

CDC firings for food safety

Abandonment of policies tied to pollution from meat and poultry

Cancellation of regional food business centers

EMEA

The New EU Vision for Agriculture and Food

Green becomes realistic

Common green claims methodology

EU eases restrictions on GMOs

Shift from sustainable use to market access

Regional unrest = reprioritization

Food chain stability over labelling

APAC

Regional Policy and Technology Alignment

Biomanufacturing

Fast-tracking industry expansion

Health

Health aligns to labeling policy

Noncommunicable diseases take priority

Building food system resilience



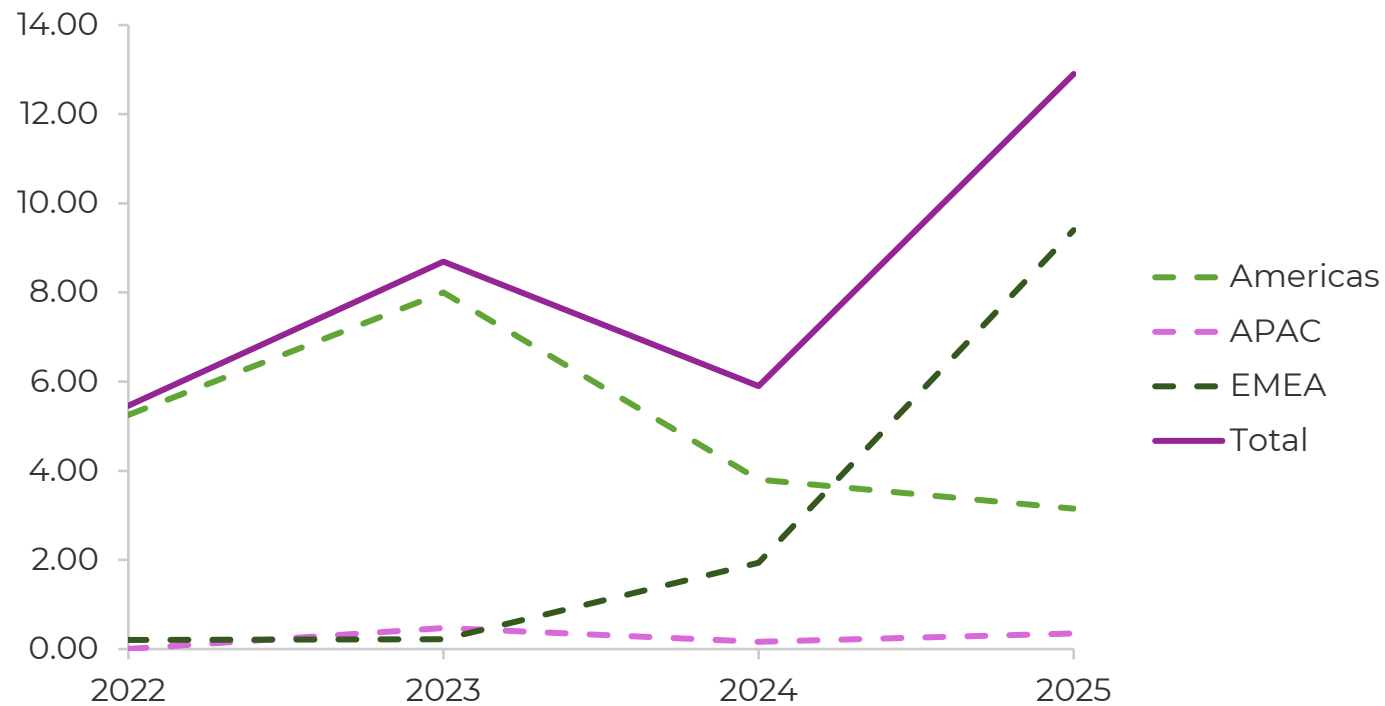
3

**Consolidate for
growth**

3

Consolidate for growth

Key Acquisitions and Mergers (USD billion)





Sustainability

**Consolidate
for Growth**

**Health &
Wellness**



**Novel
ingredients**

**Innovate for
Impact**

**Resilience and
Biosynthesis**



**Digital
transformation**

**Drive
regional
strategy via
policy**

**Digital
Food Tech**

AGENDA

1 | Key themes driving innovation in 2025

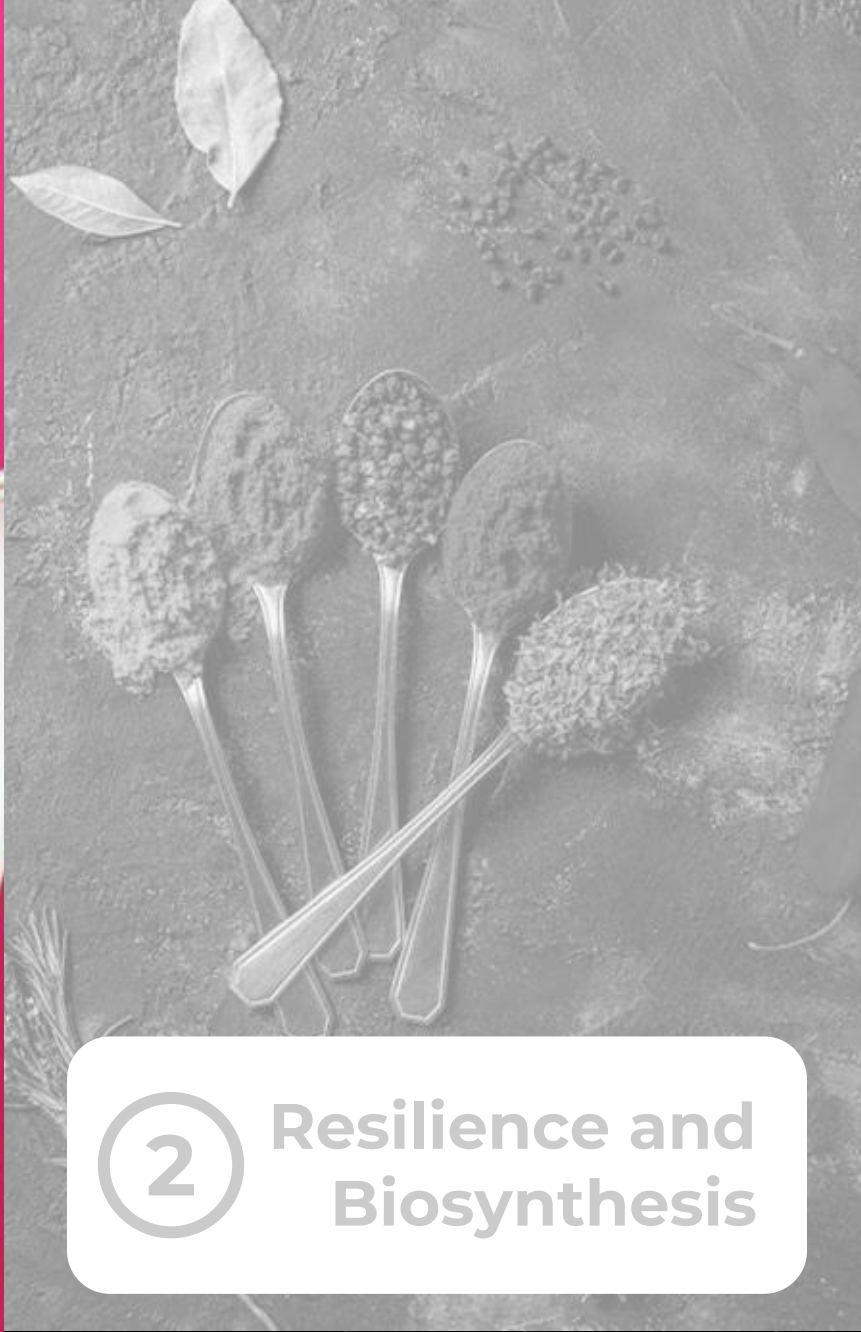
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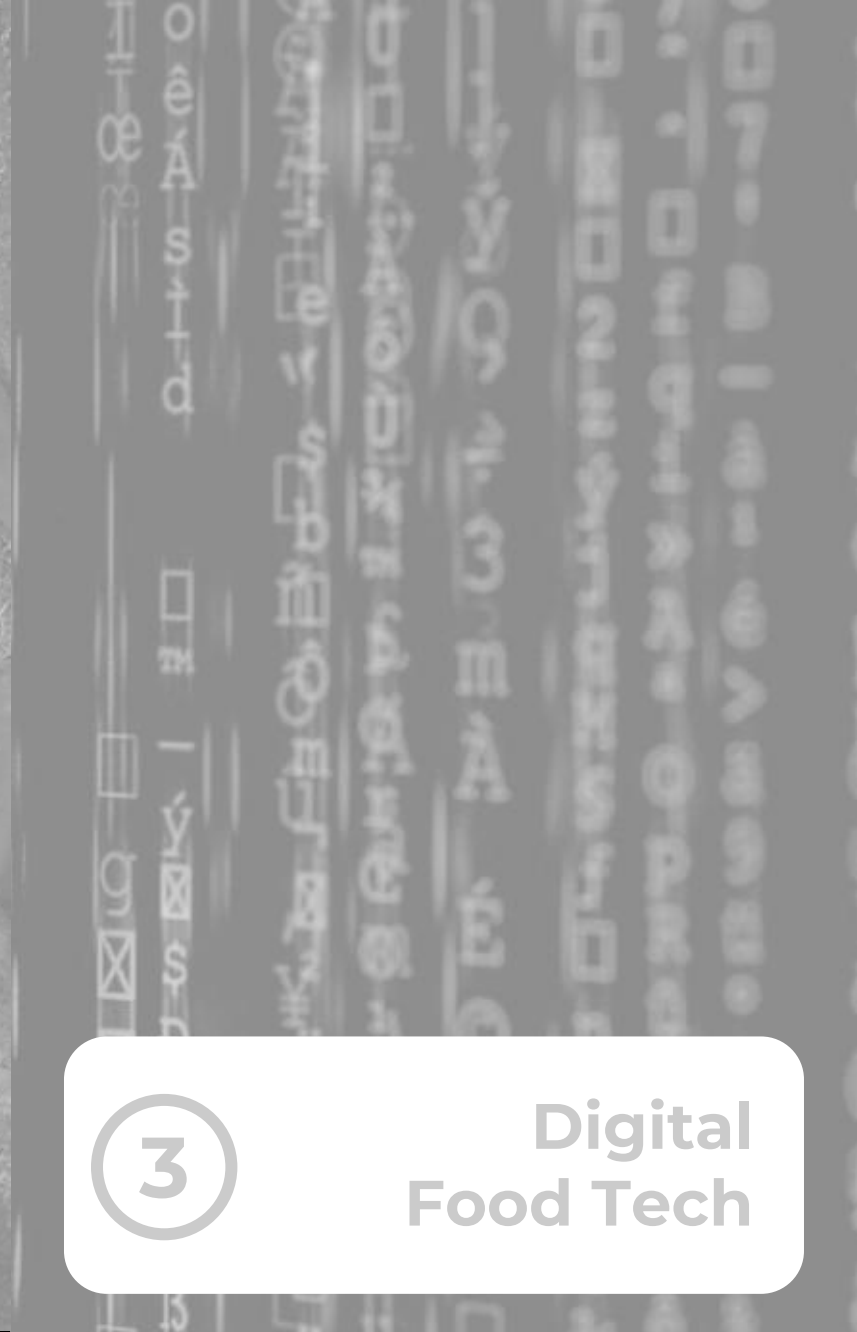
1

**Health &
Wellness**



2

**Resilience and
Biosynthesis**



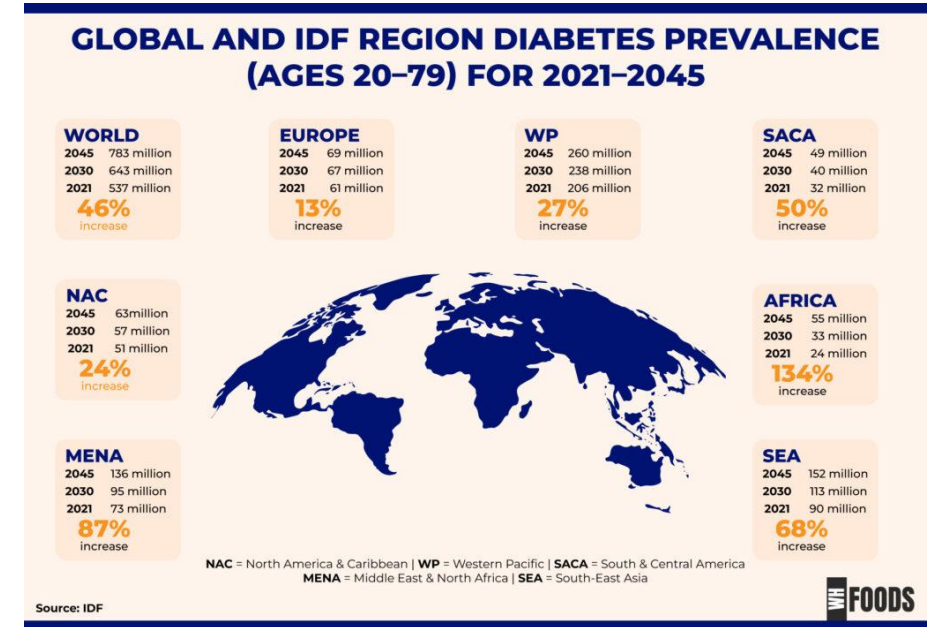
3

**Digital
Food Tech**

METABOLIC HEALTH

Metabolic health deterioration has surged in global impact and pace

- One-half billion people suffer from type 2 diabetes.
- **Risk amplification:** Metabolic health shifts the odds of chronic conditions like cardiovascular disease.
- **Opportunity:** Obesity and diabetes can be prevented with the right lifestyle interventions.



THE LUX TECH SIGNAL

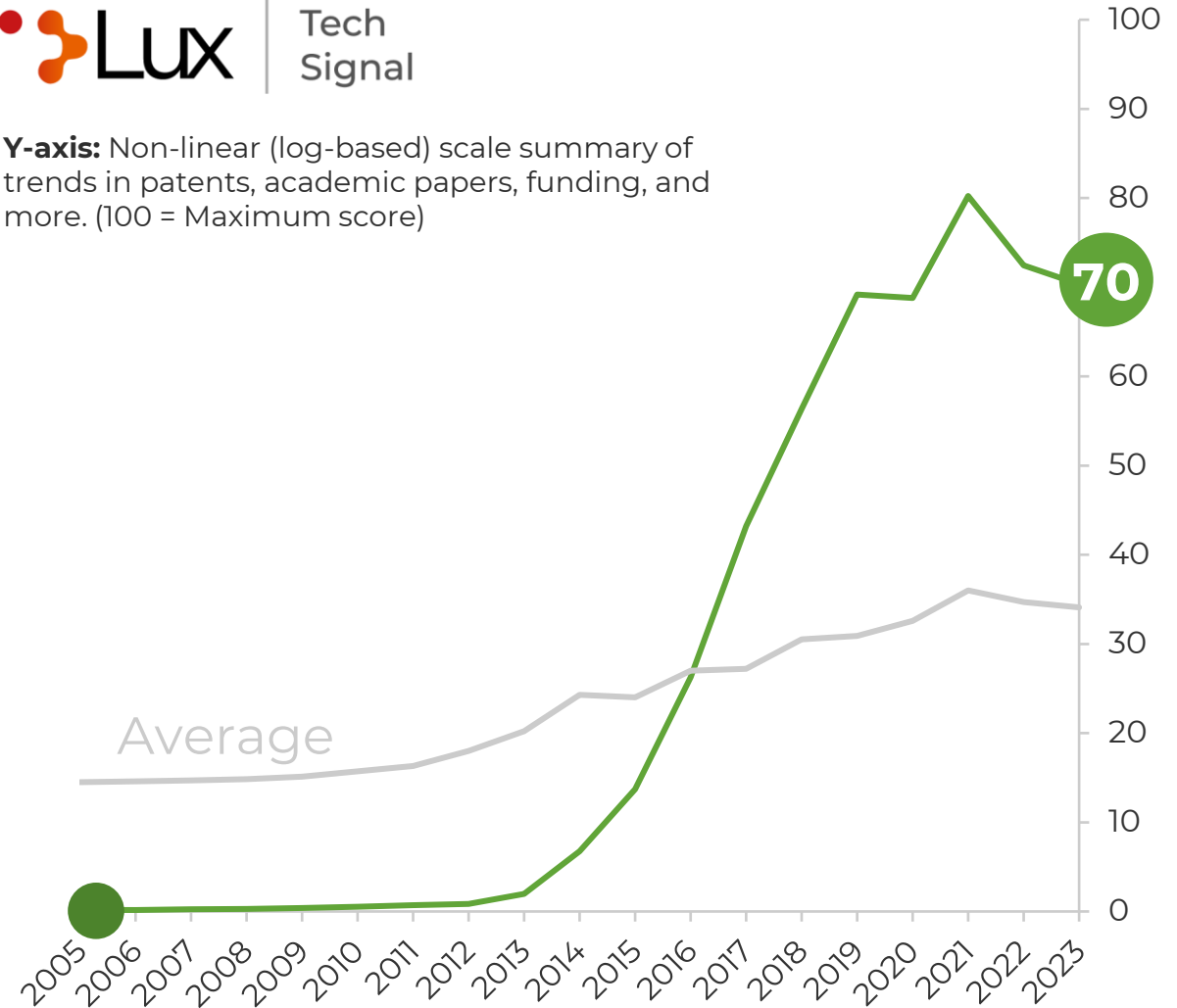
The Lux Tech Signal is based on our analysis of innovation data, including:

- Patents
- Academic papers
- VC funding
- Government funding
- Lux proprietary data



Tech
Signal

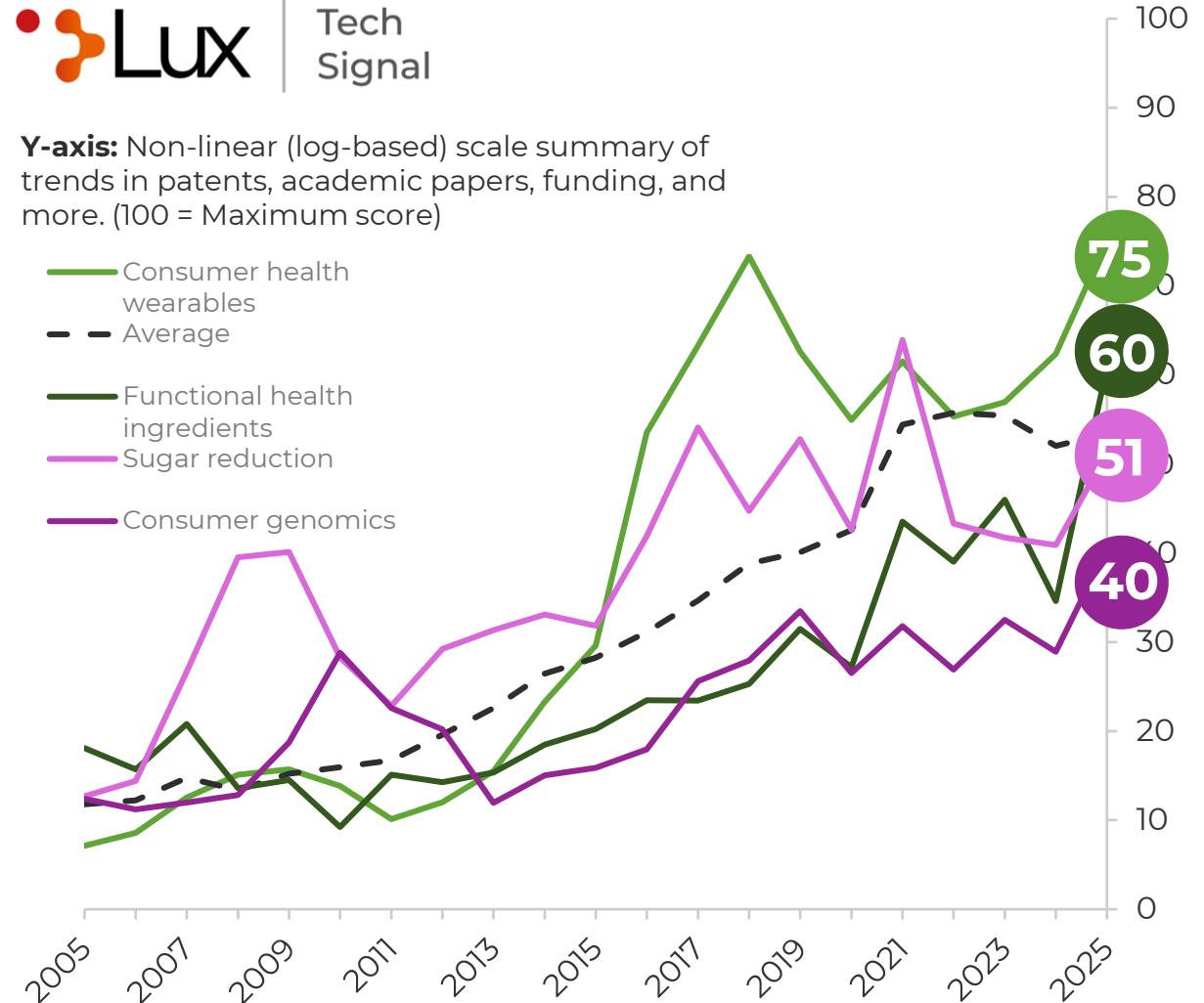
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METABOLIC HEALTH

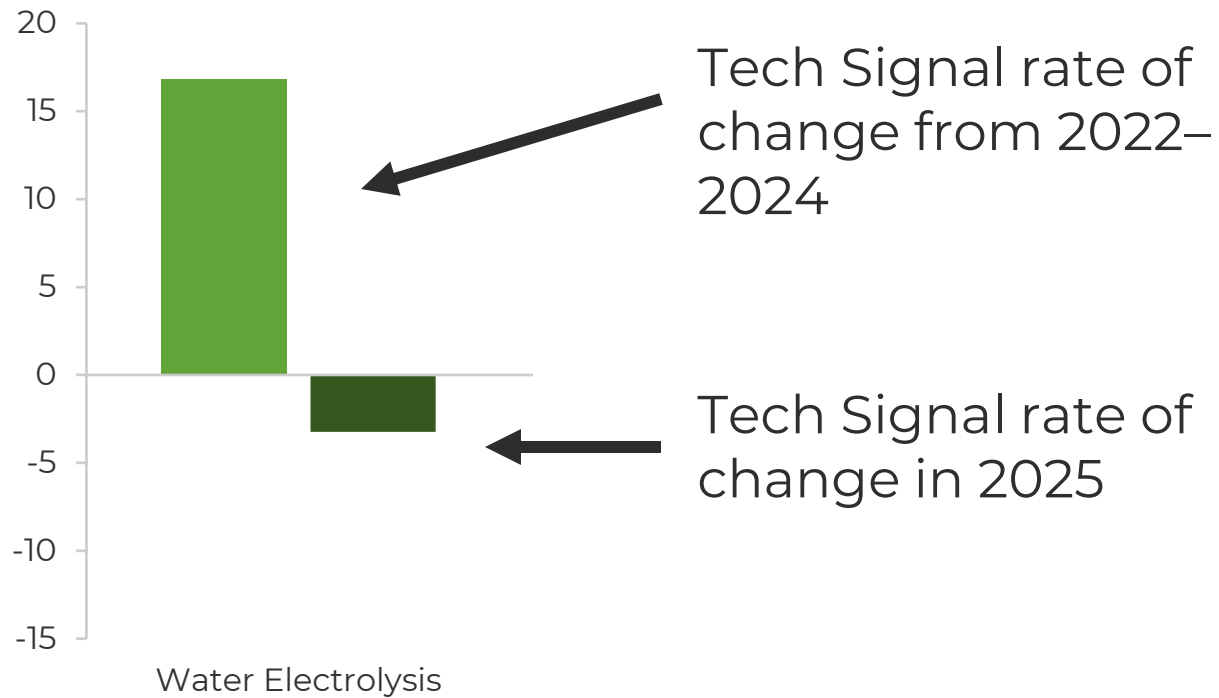
Four key technologies connected with metabolic health are evaluated with our Tech Signal:

- Consumer health wearables
- Functional health ingredients
- Sugar reduction
- Consumer genomics



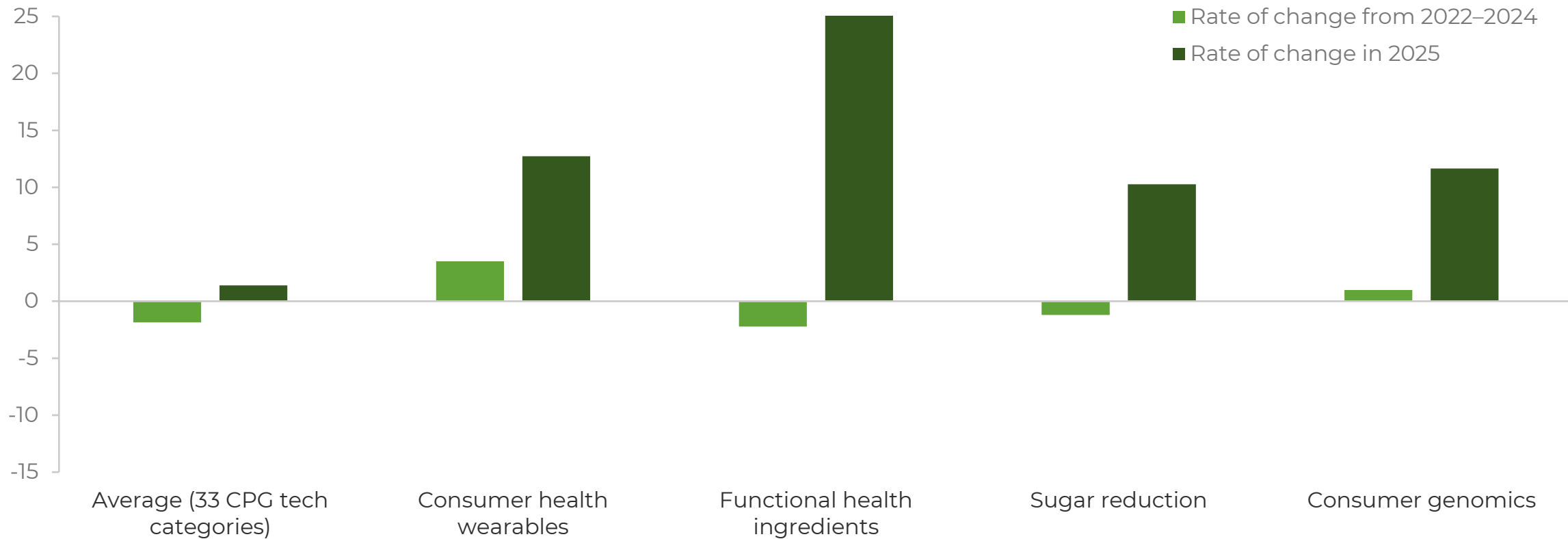
WHAT'S RISING AND FALLING?

Average Change in the Tech Signal



METABOLIC HEALTH

Average Change in Tech Signal



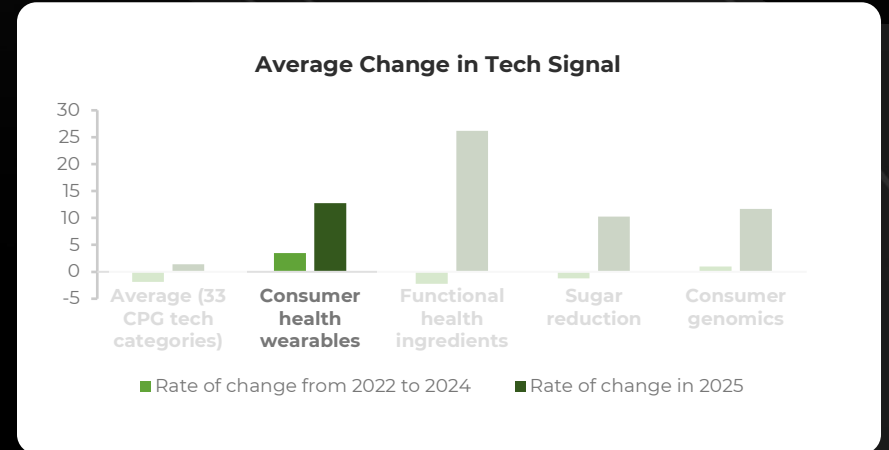
METABOLIC HEALTH: OPTIMISM

ŌURA RING

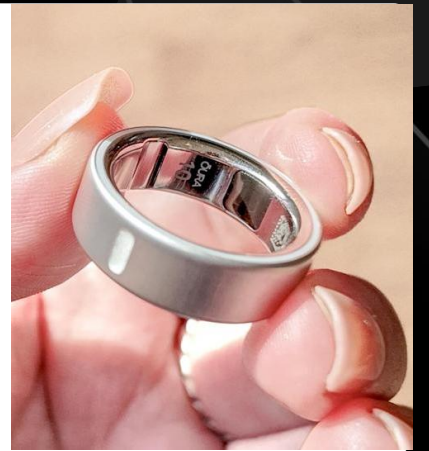
- Dexcom partnership and investment (USD 75 million) to integrate continuous glucose monitoring with Ōura sleep/stress/activity data
- Closed-loop metabolic insights (glucose + recovery/sleep), large user base, and strong balance sheet to scale B2B/B2C partnerships

LUX TAKE

Ōura's expanding user base and strategic Dexcom partnership make it a credible long-term contender in consumer metabolic health, though execution and adoption in clinical pathways remain challenges.



ŌURA
dexcom



METABOLIC HEALTH: CAUTION

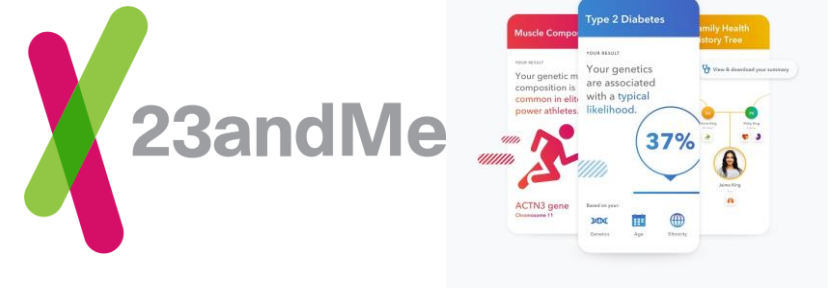
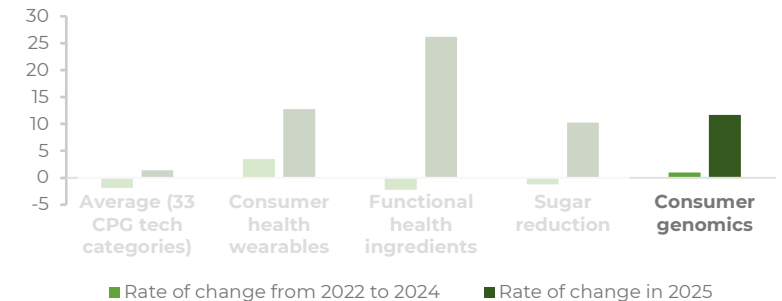
23ANDME

- Direct-to-consumer health reports, including type 2 diabetes, framed for preventive health
- Weak-recurring revenue model, data privacy and security incidents, and limited clinical utility
- Multiple layoffs, board exits, and a bankruptcy filing followed

LUX TAKE

23andMe's collapse highlights the failure of consumer genomics to deliver trusted, actionable metabolic health value, despite growing momentum in the space.

Average Change in Tech Signal





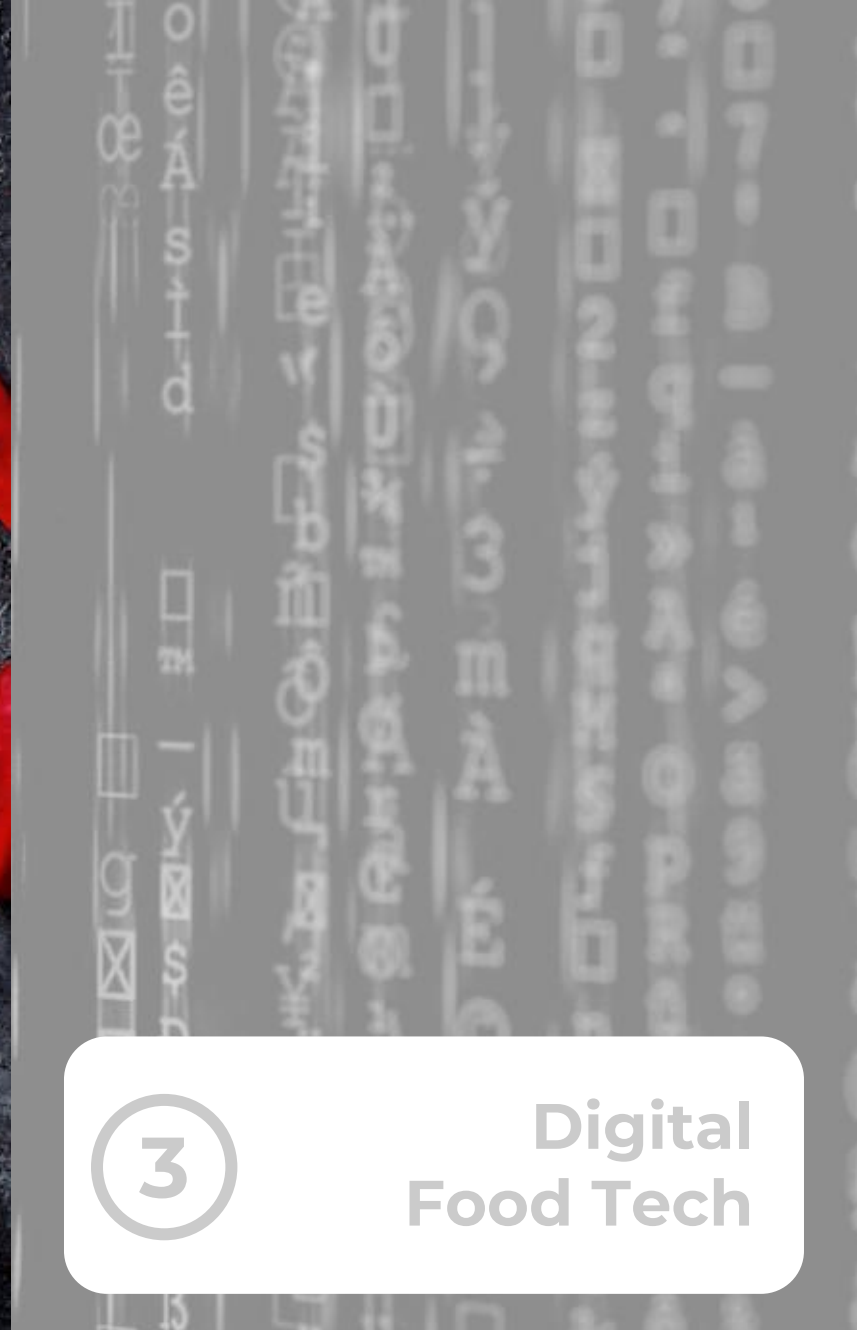
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Health &
Wellness



2

Resilience and
Biosynthesis



3

Digital
Food Tech

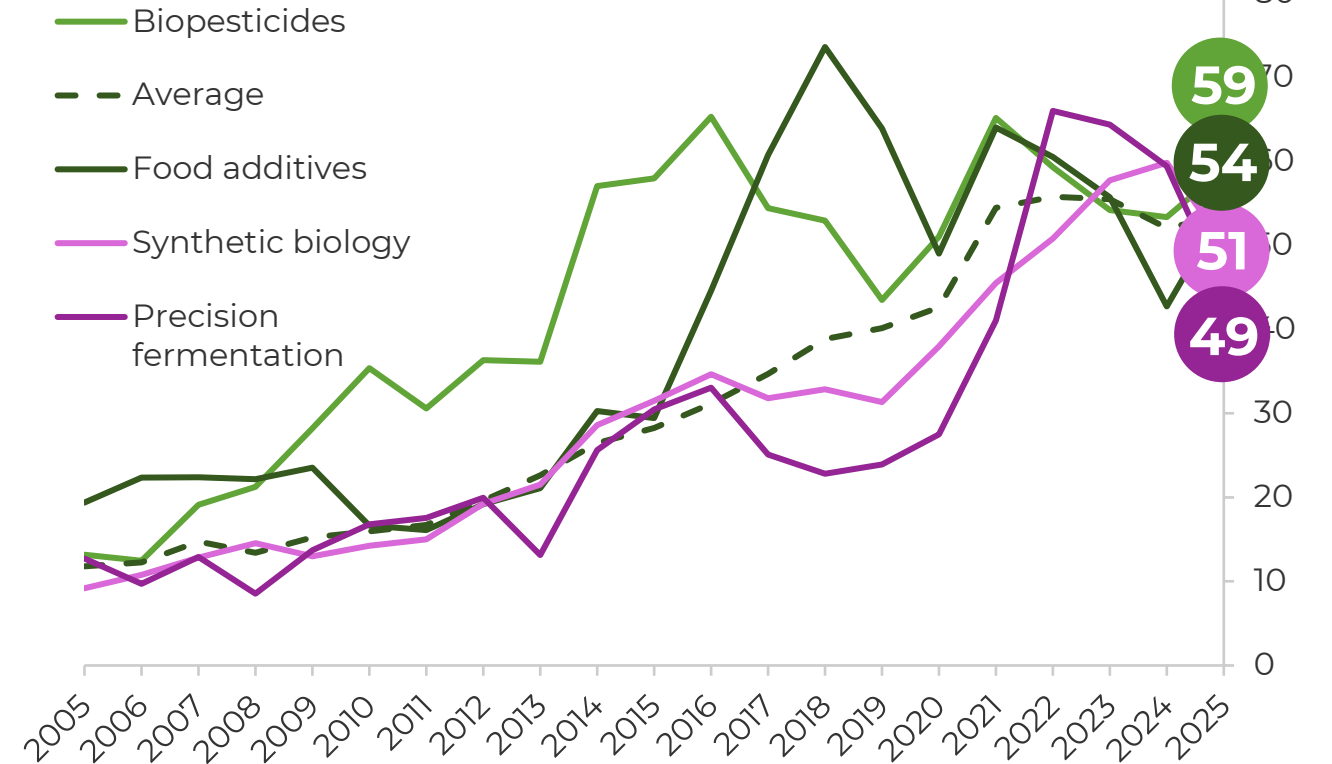
BIOSYNTHESIS AND RESILIENCE

Four key technologies connected with metabolic health are evaluated with our Tech Signal:

- Biopesticides
- Food additives
- Synthetic biology
- Precision fermentation

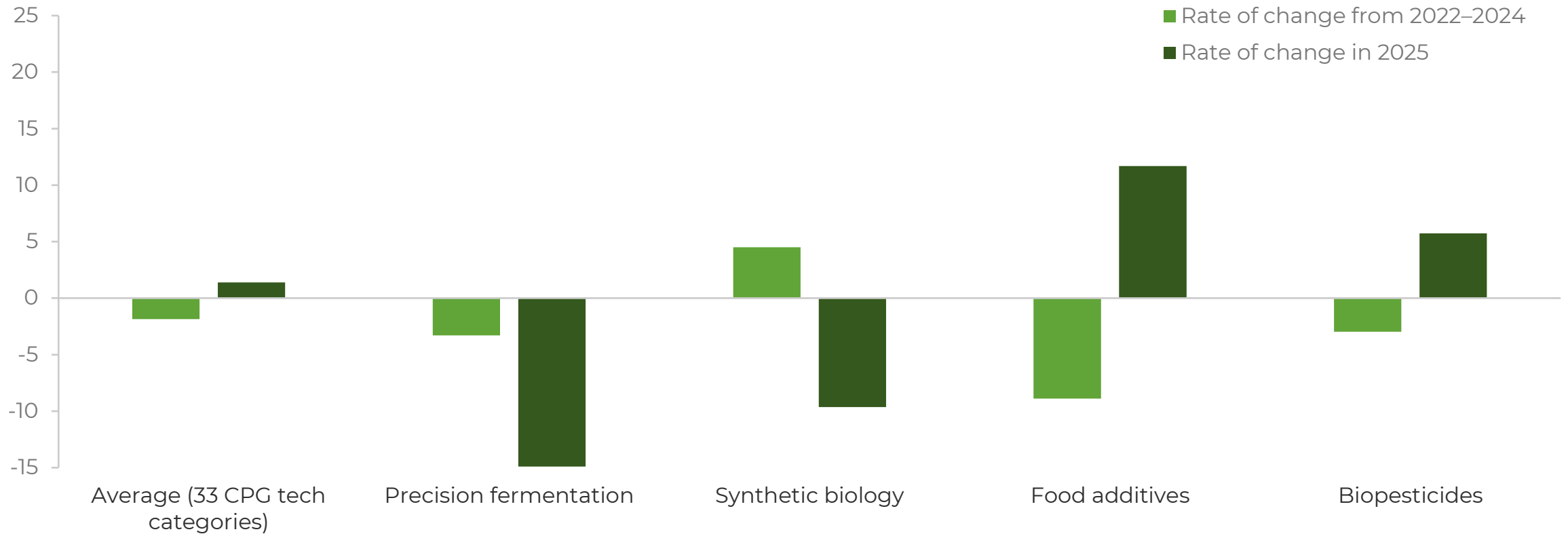


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BIOSYNTHESIS AND RESILIENCE

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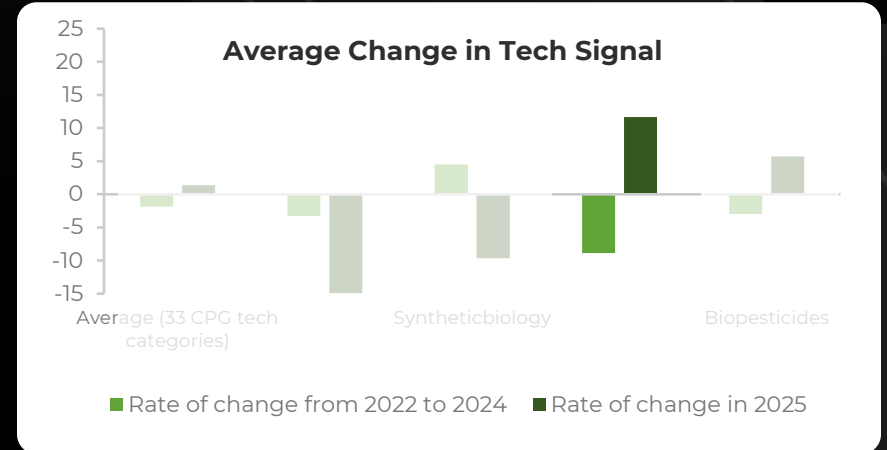
BIOSYNTHESIS: OPTIMISM

FERMELANTA

- Raised a USD 13.6 million Series A
- Microbial platform introduces up to 20 plant genes into *E. coli* for precision fermentation of complex plant metabolites
- Gram-scale yields of alkaloids, flavonoids, and carotenoids; building 3,000-L pilot facility (2026)

LUX TAKE

Fermelanta's approach positions it as an early mover in sustainable colorants via precision fermentation — though achieving cost competitiveness and navigating novel food regulations will be critical hurdles.



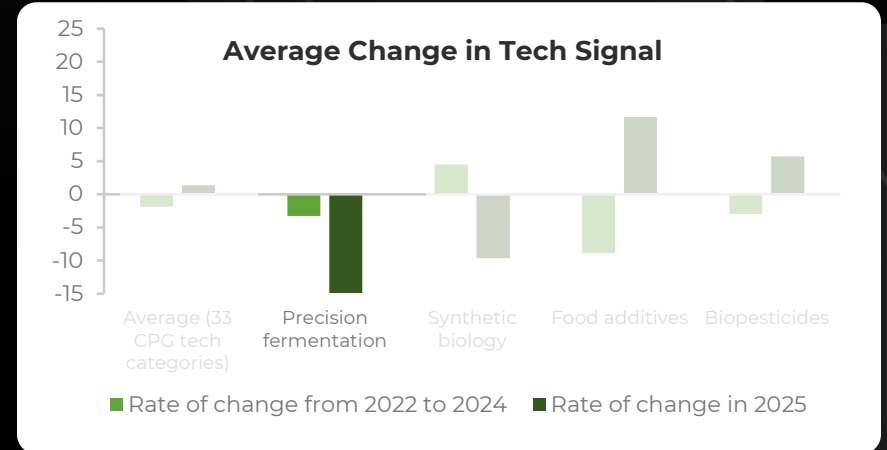
BIOSYNTHESIS: CAUTION

FRIESLANDCAMPINA

- Ended precision fermentation investments (2023)
- Exited partnership with Triplebar Bio, citing competition, consolidation, and economic viability
- Refocusing on core dairy business and early stage hybrid dairy-plant products (e.g., butter blends)

LUX TAKE

FrieslandCampina's exit highlights the high technical and economic risks of precision fermentation in dairy — clients should weigh these challenges carefully before committing major resources.





1

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Digital
Food Tech

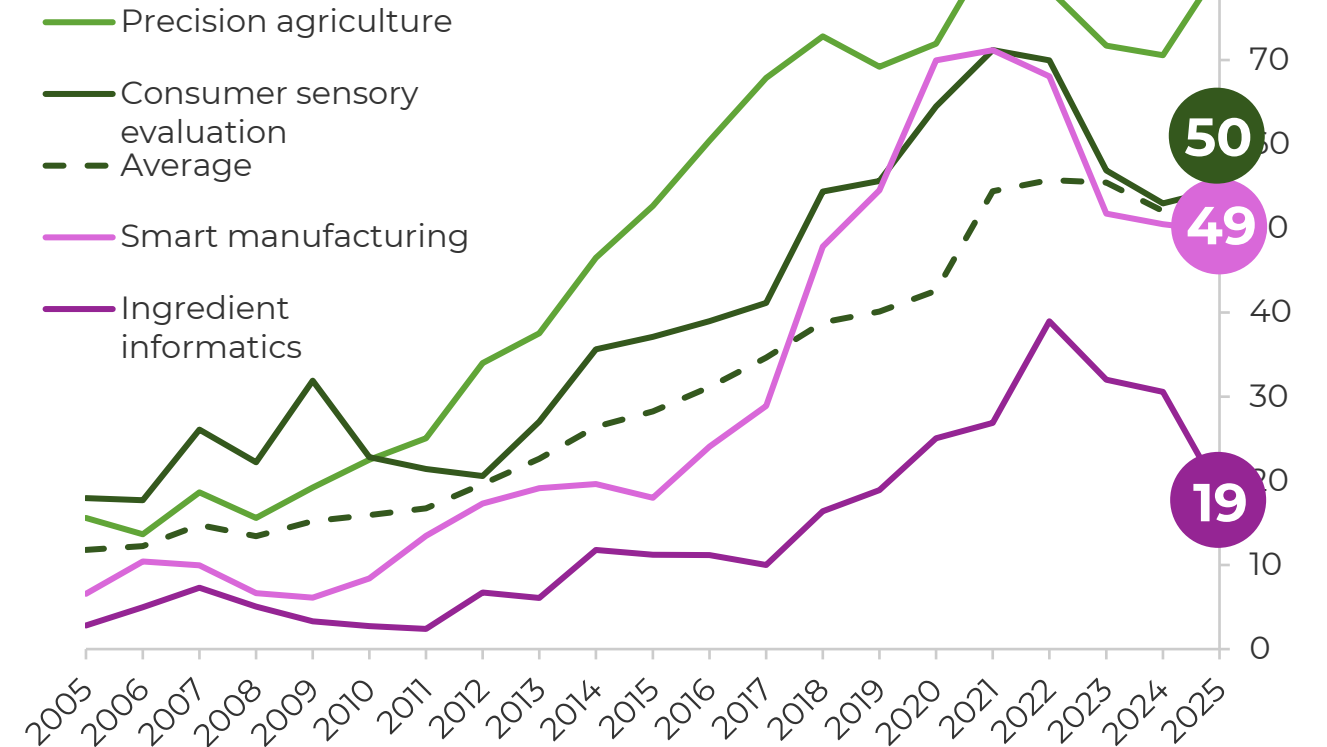
DIGITAL FOOD TECH

Four key technologies connected with digital food tech are evaluated with our Tech Signal:

- Precision agriculture
- Ingredient informatics
- Smart manufacturing
- Consumer sensory evaluation

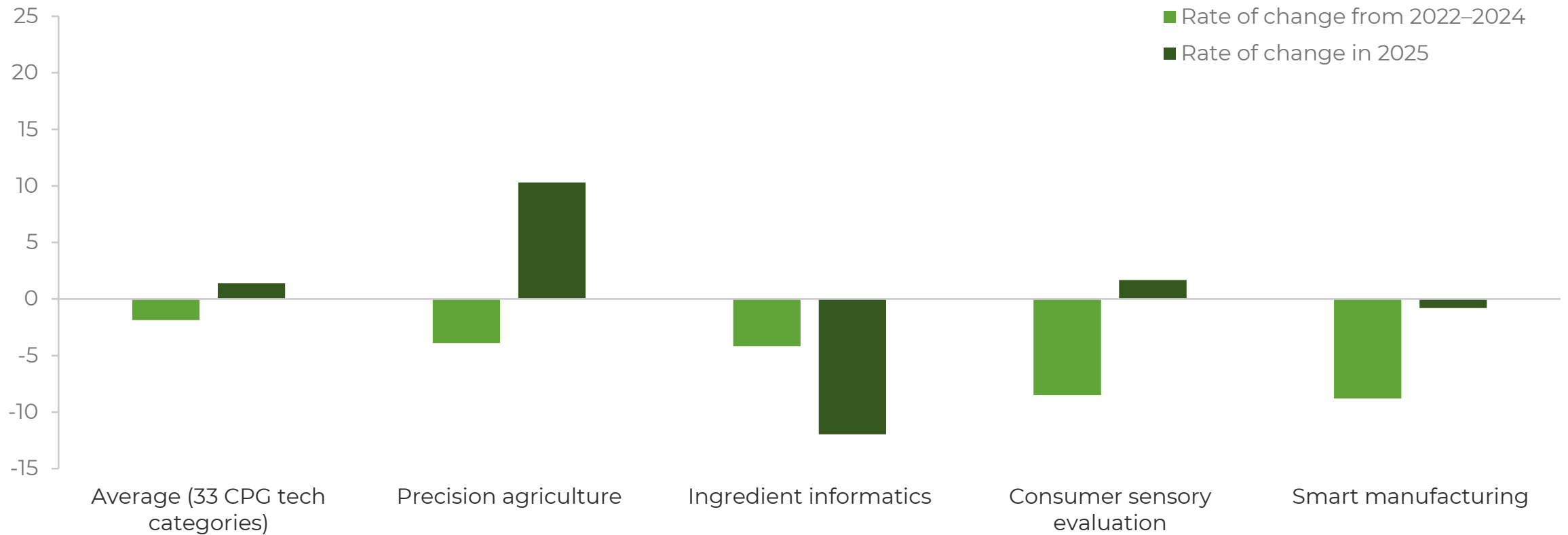


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DIGITAL FOOD TECH

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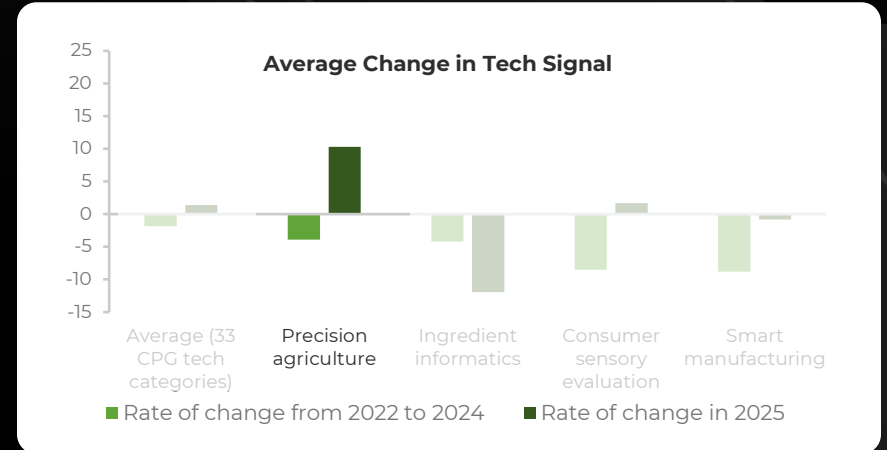
DIGITAL FOOD TECH: OPTIMISM

PEPSICO-YARA

- Long-term partnership to decarbonize crop production: ~1,000 farms covering ~128,000 ha
- Implementing crop nutrition programs and precision farming digital tools, including PepsiCo's CropTrak/ML Analytics and Yara's AtFarm/MegaLab
- Expansion to Latin America covering ~700 ha of potato farms in Mexico, Colombia, and Chile

LUX TAKE

PepsiCo and Yara show how CPGs can cut upstream emissions via precision inputs — though farmer adoption and yield stability will determine scalability.



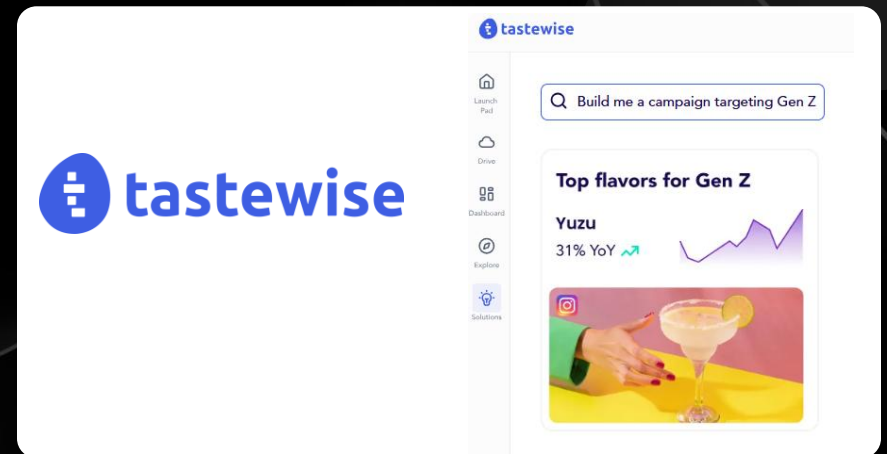
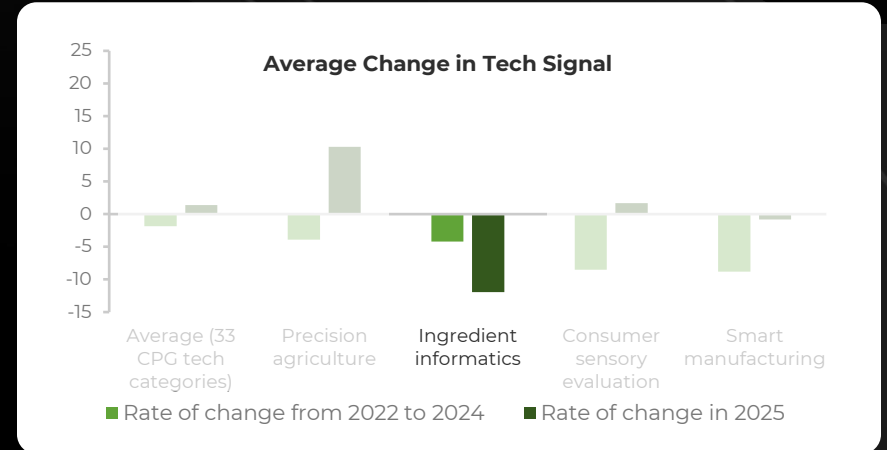
DIGITAL FOOD TECH: CAUTION

TASTEWISE

- 50 million Series B to expand its generative AI platform
- Clients include Mars, Kraft Heinz, and Campbell's to accelerate product ideation, but the platform remains reactive and focused on trend validation rather than prediction

LUX TAKE

Tastewise's funding underscores growing appetite for AI-driven insights, but clients should demand proof of predictive power and ROI before relying on it as more than a fast trend validation tool.



AGENDA

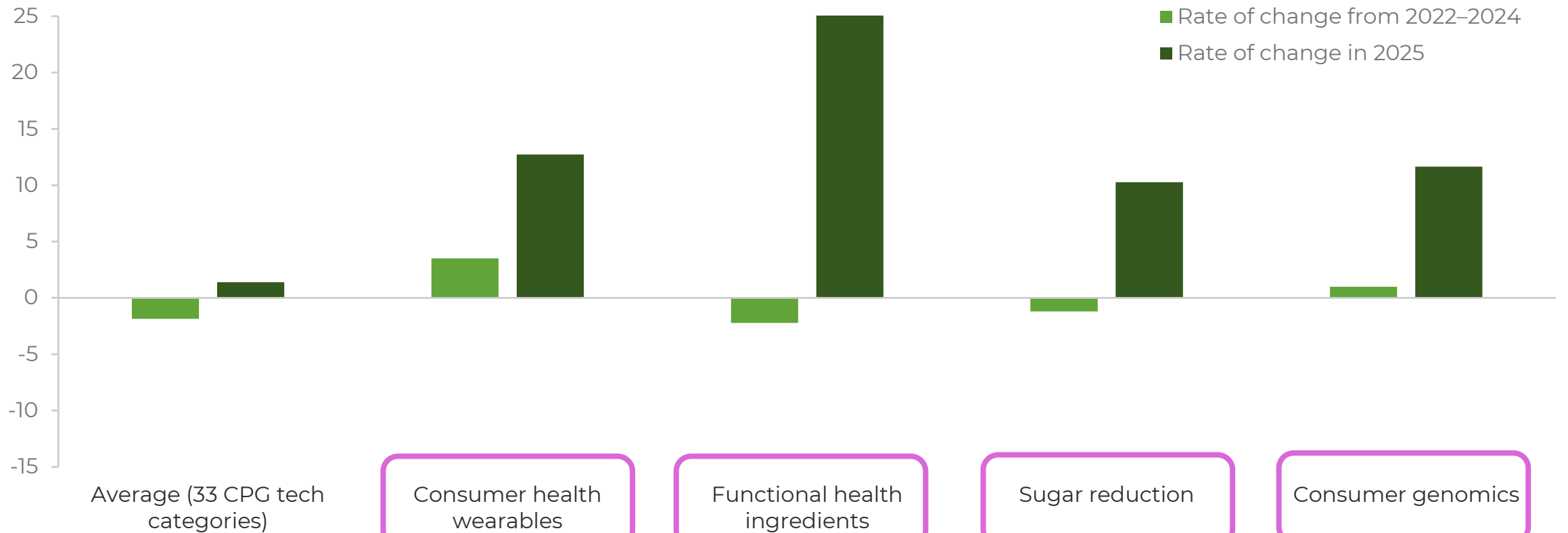
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INTEGRATING HEALTH INTO GROWTH

Average Change in Tech Signal



THE INNOVATION NEXUS – METABOLISM

EVEXIA AND NUTRIGENOMIX

- Pureplay clinician and practitioner diagnostics service for a shifting point-of-care paradigm
- Genetic testing aligned to risk profiles for lifestyle choices:
 - Nutrient metabolism
 - Food intolerances and sensitivities
 - Cardiometabolic health

LUX TAKE

Consolidation is underway and constrained to insurance or pay-out-of-pocket holistic health opportunities. Claims are required for products, and recommendations go to health professionals as a decision gate.



Element	Latest 4 Test Results			
	Sep 14 2017	Jun 20 2019	Aug 06 2020	Jan 24 2021
Glucose	89.00	83.00	90.00	83.00
Hemoglobin A1C	6.10 ↑	5.90 ↑	5.80 ↑	5.50
Insulin - Fasting				
Fructosamine				



Dietary Component	Gene, rs Number	Risk/Response Variant	Your Variant	Your Risk/Response
Caffeine	CYP1A2, rs2472300	GA or AA	AA	Elevated
Whole Grains	TCF7L2, rs12255372	TT or GT	GT	Elevated

KEY TAKEAWAYS

1

We are in the middle of a tech ecosystem pivot.

Five years of innovation, shaped by economic constraints and regional policy shifts, are redefining its focus — from sustainability to health, and novelty to resilience. The shift toward more impactful innovation is evident.

2

Health is the new innovation driver.

Despite the hype, health now leads the innovation agenda. Success depends on balancing short-term, region-specific impact with long-term platform innovation—driven by acquisitions or partnerships that enable scale.

3

Integrate for success but beware of over-extension.

Siloed systems demand consolidation to unlock health opportunities. While growing links between metabolism, nutrition, and health open new avenues, driving true disruption requires exploring deeper, more complex relationships.



THANK YOU



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