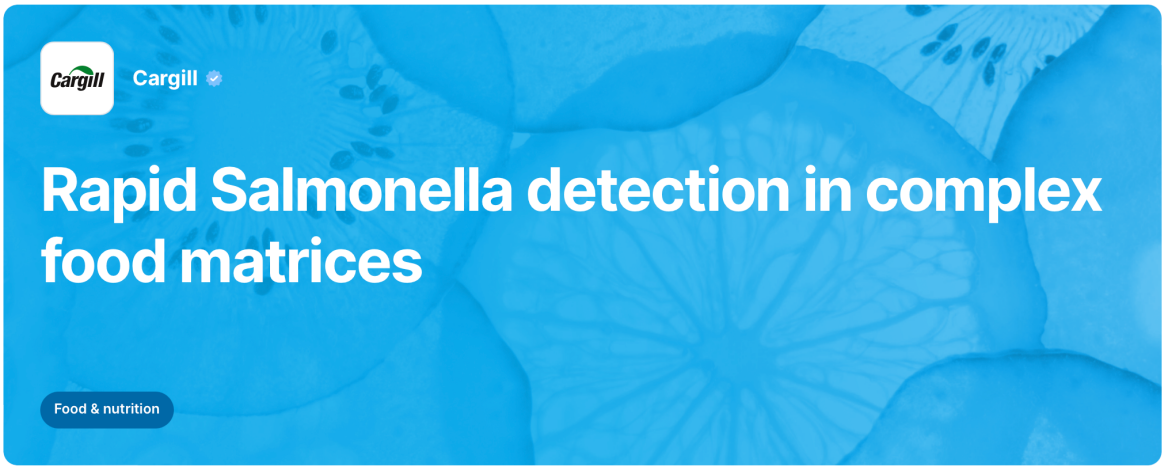

Background

Ensuring food safety is the number one priority in food, including chocolate production. Rigorous quality control measures are in place, but the unique properties of chocolate, such as its high-fat content and low water activity, create an environment in which Salmonella detection is a slow process. Chocolate's composition, which includes fats, sugars, and proteins, can interfere with the efficiency of microbiological assays and detection methods. Additionally, contamination in chocolate is rare and when observed at is at very low levels, necessitating highly sensitive testing methods to identify pathogens reliably. Detecting any low contamination levels in this complex matrix of chocolate often requires sample preparations and pre-enrichments to allow bacteria to multiply to detectable levels, thereby significantly increasing the time to results and the labor required to run the assays.

What we're looking for

We are seeking innovative, cost-effective solutions that can accelerate the detection of Salmonella in cocoa and chocolate within production environments.

Solutions of interest include:

- Specialty growth media
- Spectrophotometric methods
- RNA-based tests (e.g., RT-qPCR, CRISPR)
- Automated protocols that minimize sample handling requirements
- Biosensor-based platforms
- Immunoassays optimized for chocolate matrices

Our must-have requirements are:

- Detects Salmonella ssp., including atypical subspecies (e.g. lactose positive, non-motile)
- Detection limit must be 1 CFU (colony forming unit) per 375g of product or equivalent
- Total testing duration 8h or less
- Demonstrates potential for cost efficiency, with a target cost per test of less than 50 Euros (at scale)

Our nice-to-have's are:

- Requires minimal operator training
- Avoids hazardous reagents or equipment

Acceptable technology readiness levels (TRL): Levels 4-9

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

What we can offer you

Eligible partnership models:

Sponsored research

Benefits:

Sponsored Research

We will offer research funds up to 100k USD for early stage solutions. Additionally, for later stage solutions, we could fund the co-development to finalize the invention and license / purchase the technology.

Expertise

Access to Cargill cocoa & chocolate scientists, engineers and operations, packaging and sustainability experts.

Who we are

Our global team includes more than 1,500 research, development, applications, technical services and intellectual property specialists working in more than 200 locations. Together, they provide a spectrum of services encompassing technical service, applications, development, research, intellectual asset management, and scientific and regulatory affairs.

Reviewers

Dimitris Lykomitros
Technology Scout

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KM Lead

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