

# ACCELERATING DISCOVERY IN PROBIOTIC R&D WITH THE CALSCREENER™

HOW BIOGAIA APPLIED BIOCALORIMETRY TO ENHANCE PRODUCTIVITY AND DEEPEN INSIGHTS INTO PROBIOTIC STRAIN BEHAVIOUR

## INTRODUCTION

BioGaia is a global leader in probiotic solutions, focused on developing scientifically validated products to promote gut health and immune function. They have over 30 years of experience manufacturing and developing probiotic products with over 200 000 hours of research behind their products.

Their research has led them to patent several strains which has been used in many of their probiotic products and has been cited in over 200 peer-reviewed articles. Headquartered in Sweden, BioGaia operates with a global footprint, with production sites and partnerships across countries including the USA, Denmark, Spain, and Japan.

At the forefront of their innovation strategy is a commitment to deepening understanding of microbial behavior at the metabolic level. Within BioGaia's global R&D center in Sweden the calScreener™ (Fig 1) has become a key tool in the exploration of probiotic strain behavior and interactions.

**Company:** BioGaia

**Industry:** Probiotic Health Products

**Application:** R&D, Probiotic Strain Screening and Characterization

**Instrument:** Symcel calScreener™



**Fig 1.** calScreener biocalorimeter system.



“We can have an idea in the morning and be running an experiment by the afternoon, it gives us creative freedom in the lab that’s hard to match.”

**Sebastian Håkansson**  
Director of Process R&D at BioGaia

## CHALLENGES IN STRAIN EVALUATION AND SCREENING

In early-stage R&D, the ability to rapidly screen hypotheses and explore novel ideas is essential - but often limited by time, labor, and available infrastructure. Traditional microbiological methods such as plating or cell counting can be labor-intensive, slow, and poorly suited to detect subtle metabolic effects or interactions between strains.

Researchers at BioGaia needed a method that would allow:

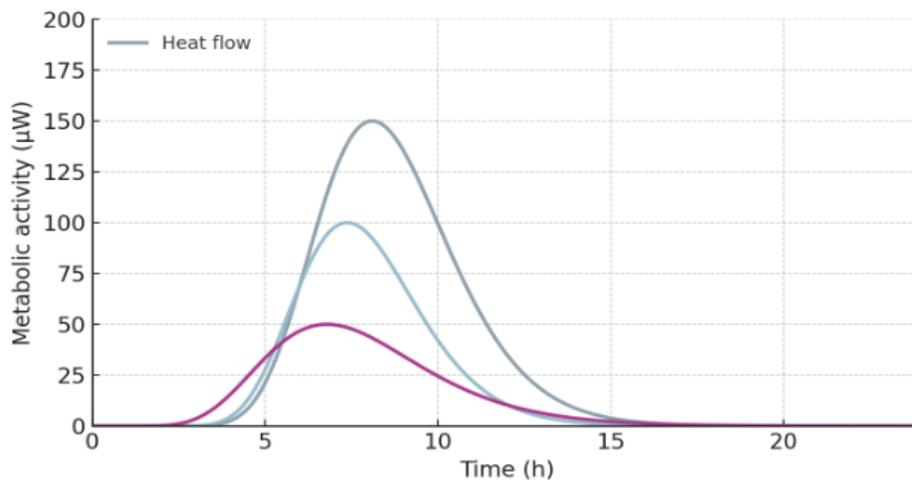
- Rapid validation or rejection of early hypotheses
- Insight into metabolic activity beyond growth rate alone
- Minimal labor for experimental setup
- The ability to detect synergistic effects between strains

## THE SOLUTION: ACCELERATED R&D VIA BIOCALORIMETRY

The Symcel calScreener™ biocalorimeter system was introduced to BioGaia’s R&D pipeline to enable high-throughput, non-invasive metabolic analysis of live probiotic cultures. The system allows researchers to quickly set up and run experiments, often within hours of formulating a new hypothesis.

“We can have an idea in the morning and be running an experiment by the afternoon,” said Sebastian Håkansson, Director of Process R&D at BioGaia. “It gives us creative freedom in the lab that’s hard to match.”

In addition to single-strain studies, the calScreener has proven particularly valuable in screening combinations of probiotic strains for metabolic synergy. By measuring heat output, BioGaia’s scientists can infer cooperative behavior or stress responses not easily captured by standard assays (Fig 2).



**Fig 2.** calScreener metabolic activity graphs.

## IMPLEMENTATION INTO THE R&D WORKFLOW

The calScreener was rapidly integrated into BioGaia's daily R&D workflows. While initial data analysis required some adaptation, improvements in the software have streamlined usability.

"We had a few teething issues with data processing early on, but the latest software updates made it significantly easier," Håkansson noted.

The team is also exploring the development of custom setups using semi-solid media and dialysis-style inserts to investigate cross-feeding between strains. The flexibility of the system means that if it fits on the vials, it will measure the heat output from the microbial communities.

## RESULTS: TRANSFORMING R&D PRODUCTIVITY AND ACCELERATING DISCOVERY

The impact of the calScreener has been both scientific and strategic:

- **Faster iteration:** Ideas can be tested quickly and discarded or expanded without consuming excessive time or materials.
- **Metabolic insight:** Researchers have observed unique heat profiles under specific nutrient and salt conditions that revealed unexpected behaviors.
- **Strain synergy detection:** The system has enabled the identification of cooperative behavior between strains that might otherwise go unnoticed.
- **Cultural shift in R&D:** Calorimetry is now a first-line tool considered in nearly every new research question.

"It's not just a piece of equipment—it's changed how we think about testing new ideas. For creative researchers, that's invaluable."

-Håkansson.

## CONCLUSION

BioGaia's use of the calScreener demonstrates how real-time metabolic profiling can empower faster, smarter decision-making in probiotic research and product development.

Though initially justified by its potential to predict product stability, the calorimeter has become a mainstay of BioGaia's exploratory science, giving researchers a rapid, low-effort way to turn curiosity into discovery.

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