

CHALLENGER

 Bayerisches Landesamt für
Gesundheit und Lebensmittelsicherheit


SOLVER


 ALSO FUNDED
BY THE EIC

 European
Innovation
Council


PUREVOO

Ensuring Extra Virgin Olive Oil integrity from admixtures with lower quality vegetable oils using DNA-based technologies.

Innobuyer collaborated with public institutions (challengers) to identify their unmet innovation needs and select suitable SMEs (solvers) to address them. The matched teams co-created pilot solutions over a 10-month period. Following successful pilots, challengers received support from Innobuyer and experts to design simplified ToR. Each project was backed by €100,000 in financial support—€41,500 for the challenger and €58,500 for the solver.

THE NEED

Food fraud is a growing global problem, and extra virgin olive oil (EVOO) is among the most frequently adulterated products. In Germany, rising imports and high market value have increased the risk of EVOO being mixed with cheaper vegetable oils such as sunflower, safflower, or hazelnut. The Bavarian Health and Food Safety Authority (LGL) sought a reliable and cost-effective solution to detect such adulteration to complement the limits of traditional chemical and sensory analyses. The challenge was to **develop a rapid and accurate DNA-based assay capable of verifying product integrity and protecting both consumers and producers**. The need addressed not only public health, food authenticity and market transparency, but also the competitiveness of honest producers in the EU's olive oil sector.

THE SOLUTION

The **PurEVOO** project, co-created by **BioCoS** (Solver) and **LGL** (Challenger) under the Innobuyer programme, delivered a cutting-edge DNA-based authentication tool to detect even trace levels of edible oils in EVOO. Using BioCoS's proprietary **True-Plant BioCoS** algorithm, the team identified unique genetic markers for multiple species commonly used in EVOO fraud. The markers were used to develop probe-based PCR assays validated for specificity, robustness, and sensitivity (down to 0.1–1 DNA copy). The solution detects sunflower, safflower, sesame, peanut, and almond oils mixed with EVOO and is fully compatible with existing laboratory equipment. The solution will be tested by LGL to see if it is applicable to olive oils on the German market.

THE IMPACT

PurEVOO exceeded all initial goals. It successfully validated **five molecular detection systems and three duplex probe-based assays**, improving both accuracy and time efficiency compared to chemical testing. The solution in the future shall empower authorities such as LGL to confirm adulteration rapidly, using their existing molecular infrastructure, reducing testing time and cost. For BioCoS, the project strengthened scientific credibility and market readiness, positioning the company for future adoption across Europe. Dissemination activities included a **presentation at the European Parliament (European Food Forum, May 2025), a white paper, and a poster accepted at the Yale Symposium on Olive Oil and Health (December 2025)**. The pilot not only validated a new technology but also demonstrated the power of SME–authority collaboration to produce tangible tools that protect consumers and reinforce Europe's leadership in food quality control.



PUREVOO TRANSFORMED A SCIENTIFIC VISION INTO A SOLUTION READY FOR REAL-WORLD ENFORCEMENT. WORKING WITH LGL GAVE US THE CHANCE TO ADAPT OUR DNA-BASED TECHNOLOGY TO REGULATORY NEEDS, WHILE BUILDING MUTUAL TRUST AND SHARED UNDERSTANDING BETWEEN SCIENCE AND POLICY. FOR BIOCOS, THIS WAS A MILESTONE IN CONNECTING INNOVATION WITH IMPACT.

— DR. ATHANASIA MARIA DOUROU, CO-FOUNDER/CTO, BIOCOS

THE COLLABORATION WITH LGL DEMONSTRATED HOW AGILE SMES CAN ACCELERATE INNOVATION IN PUBLIC FOOD CONTROL. THE PROJECT'S OUTCOMES HAVE THE POTENTIAL TO OPEN A NEW CHAPTER IN OLIVE OIL AUTHENTICATION.

— DR. INGRID HUBER, BAVARIAN HEALTH AND FOOD SAFETY AUTHORITY (LGL)

