

# MSCA STAFF EXCHANGES

Marie Skłodowska-Curie Staff Exchanges

## Cross-Sector Exchange for Precision Fermentation in Sustainable Food AGRISWAP

| Field           | Value                      |
|-----------------|----------------------------|
| Call Identifier | HORIZON-MSCA-2026-SE-01-01 |
| Type of Action  | MSCA Staff Exchanges       |
| Duration        | 48 months                  |
| Total Budget    | EUR 1,080,000              |
| EU Contribution | EUR 1,080,000              |

## Abstract

AGRISWAP (Cross-Sector Exchange for Precision Fermentation in Sustainable Food) is a 48-month MSCA Staff Exchanges project establishing a durable inter-sectoral and international research and innovation network to accelerate knowledge transfer and increase the industrial readiness of precision fermentation for sustainable food systems. The consortium unites Wageningen University & Research (Netherlands, coordinator), Instituto Superior de Agronomia – Universidade de Lisboa (Portugal, academic), FermentTech Italia Srl (Italy, SME), and EMBRAPA Food Technology (Brazil, non-associated third country), spanning three EU Member States and three organisational sectors. Through up to 360 funded person-months of physical secondments structured around four thematic research clusters - strain engineering and synthetic biology, fermentation process optimisation and scale-up, food-safety characterisation and regulatory science, and knowledge dissemination and exploitation - AGRISWAP transfers frontier microbial cell-factory know-how between academia and industry, validates precision-fermentation protocols for at least two functional food ingredients at pilot scale, and builds cross-sectoral regulatory competence aligned with EU Regulation 2015/2283. Going beyond the current state of the art, AGRISWAP uniquely integrates tropical microbial biodiversity from EMBRAPA's collections into European precision-fermentation pipelines and bridges the lab-to-pilot translation gap that currently limits industrial uptake. Staff at all career stages benefit from immersive exposure to complementary research cultures, with structured mentoring, a Gender Action Plan ensuring at least 40% representation of under-represented genders among seconded cohorts, and Open Science practices embedded throughout. The project delivers at least 12 open-access publications, FAIR-compliant datasets, two stakeholder workshops, a publicly available regulatory roadmap, and a post-project Joint Research Agreement committing partners to continued collaboration for at least three years after project end. AGRISWAP directly supports EU Farm to Fork Strategy priorities and Horizon Europe bioeconomy goals, positioning European research and industry as global leaders in sustainable food biotechnology.

**Keywords:** precision fermentation, sustainable food systems, inter-sectoral mobility, staff secondments, bioprocess engineering, synthetic biology, food safety, knowledge transfer, MSCA Staff Exchanges, international collaboration

## SECTION 1 - EXCELLENCE

### 1.1 Objectives and Ambition

AGRISWAP establishes a durable, inter-sectoral, and international research and innovation network centred on precision fermentation as a strategic lever for sustainable food systems. The consortium unites Wageningen University & Research (WUR, Netherlands, coordinator), Instituto Superior de Agronomia – Universidade de Lisboa (ISA-ULisboa, Portugal, academic), FermenTech Italia Srl (Italy, food-tech SME), and EMBRAPA Food Technology (Brazil, non-associated third-country research centre). This configuration exceeds the MSCA Staff Exchanges minimum eligibility requirements: it spans three EU Member States plus a non-associated third country and integrates academic, SME, and non-academic research-centre sectors, thereby maximising every dimension of mobility encouraged by the Work Programme.

The project pursues four Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) objectives: (O1) transfer and co-develop microbial cell-factory and strain-engineering methodologies between academic and industrial partners through physical secondments by month 36; (O2) validate scalable precision-fermentation process protocols for at least two functional food ingredients at pilot scale by month 42; (O3) build cross-sectoral competence in food-safety assessment and EU novel-food regulatory science, culminating in a published regulatory roadmap and policy brief by month 40; and (O4) institutionalise a lasting collaborative governance structure through a Joint Research Agreement signed by month 42 that sustains joint R&I for at least three years beyond the funded period. These objectives are grounded in EU Farm to Fork Strategy priorities, the Horizon Europe Bioeconomy Mission, and the global imperative to reduce the environmental footprint of protein and ingredient production.

The scientific ambition of AGRISWAP goes beyond the current state of the art in two respects. First, whereas existing precision-fermentation research predominantly uses model organisms and lab-scale systems, AGRISWAP couples frontier synthetic-biology toolkits with industrial-scale bioprocess infrastructure to achieve pilot-scale validation - a translation step rarely accomplished within a single funded project. Second, the consortium uniquely integrates tropical microbial biodiversity sourced from EMBRAPA's collections into European precision-fermentation pipelines, opening a previously unexplored genetic resource space for functional-ingredient discovery. No single partner commands the full knowledge stack required for these advances, making physical secondments indispensable rather than merely supplementary.

### 1.2 Relation to the Work Programme

AGRISWAP responds directly to call HORIZON-MSCA-2026-SE-01-01, which targets innovative international, inter-sectoral, and interdisciplinary collaboration through staff secondments designed to generate or strengthen long-term R&I partnerships. The project addresses all three mobility dimensions specified in the Work Programme: international (EU–Brazil exchanges), inter-sectoral (academic institutions, an SME, and a non-academic research centre), and interdisciplinary (microbiology, bioprocess engineering, food science, and regulatory affairs). The emphasis on physical secondments, structured mentoring, and joint training aligns precisely with the expected outcomes for staff members - enhanced skills, entrepreneurial mind-sets, and extended international networks - and for organisations - innovative knowledge transfer and boosted R&I capacity.

AGRISWAP also contributes to the broader Horizon Europe goals of strengthening the European Research Area, fostering Open Science, and increasing Europe's attractiveness as a global R&I destination. The inclusion of FermenTech Italia exemplifies the Work Programme's explicit encouragement of SME participation in the non-academic sector. The engagement of EMBRAPA reflects the strongly encouraged participation of institutions from non-associated third countries,

adding international dimension and scientific complementarity that would be unachievable through a purely European consortium. The precision-fermentation thematic focus ensures direct policy coherence with European strategic priorities in sustainable bioeconomy and food-system resilience, including the Farm to Fork Strategy target of making sustainable food the easy choice for consumers and industry alike.

### **1.3 Concept and Methodology**

The methodological core of AGRISWAP is a structured secondment programme organised around four thematic research clusters: (i) strain engineering and synthetic biology; (ii) fermentation process optimisation and scale-up; (iii) ingredient characterisation, food safety, and regulatory compliance; and (iv) techno-economic and sustainability analysis. All secondments are physical, in full compliance with programme rules, and are planned for durations of one to twelve months per staff member, with a total of up to 360 person-months. Knowledge transfer is achieved through practice: seconded staff perform hands-on research tasks at the host institution and return to their sending organisation as embedded knowledge carriers and active network nodes, ensuring that expertise is institutionalised rather than held by individuals alone.

The secondment programme is reinforced by annual joint consortium schools, a shared digital laboratory notebook for FAIR-aligned knowledge management, and regular inter-secondment virtual seminars to maintain scientific coherence between in-person mobilities. A gender-inclusive approach is embedded structurally: the consortium commits to gender balance across seconded cohorts, monitored via an annual Gender Action Plan report, with targeted mentoring for under-represented groups activated from month 1 should imbalances be identified. Open Science is operationalised through a Data Management Plan submitted at month 6, mandatory FAIR-compliant dataset deposition, and an open-access mandate for all peer-reviewed publications. Intellectual property is governed by a Consortium Agreement concluded before the first secondment, clearly distinguishing background from foreground IP and providing transparent licensing provisions that protect both academic and industrial interests. A mid-term internal review at month 24 assesses secondment flows and research progress, enabling reallocation of person-months within the programme maximum, thereby ensuring adaptive management throughout the 48-month project lifetime.

### **1.4 Interdisciplinary Considerations**

Precision fermentation is structurally interdisciplinary, requiring the integration of molecular biology, microbial genetics, chemical and bioprocess engineering, food science, nutritional science, and regulatory affairs. AGRISWAP exploits this breadth deliberately. WUR researchers seconded to FermenTech Italia encounter industrial scale-up logic, quality-management systems, and techno-economic constraints that are largely foreign to academic practice; ISA-ULisboa food scientists seconded to EMBRAPA integrate tropical microbial ecology into food-ingredient development pipelines; FermenTech engineers seconded to WUR gain exposure to predictive metabolic modelling and systems-biology approaches. These cross-disciplinary encounters are designed features of the programme architecture, not incidental by-products.

Joint training events include modules on science communication, responsible research and innovation, and sustainability assessment, equipping seconded staff to operate effectively across disciplinary and sectoral boundaries throughout their careers. The techno-economic and life-cycle analysis cluster further integrates sustainability science and consumer-behaviour perspectives, ensuring that the research outputs are evaluated not only for scientific merit but also for societal relevance and market viability. This interdisciplinary architecture is expected to generate novel methodological combinations - such as coupling synthetic-biology toolkits with traditional fermentation process knowledge, regulatory pathway mapping, and life-cycle impact metrics - that produce scientific and practical added value exceeding the sum of the partners' individual capabilities. The gender dimension is likewise embedded in the scientific design: research on

fermentation-derived food ingredients benefits from diverse researcher perspectives on consumer acceptance and nutritional outcomes, reinforcing the case for gender-balanced secondment cohorts.

DRAFT

## SECTION 2 - IMPACT

### 2.1 Pathways Towards Impact

AGRISWAP generates impact at three interconnected levels, with clearly defined pathways and measurable targets at each.

For individual staff members, secondments provide immersive exposure to complementary research cultures, techniques, and career trajectories. Early-career researchers gain simultaneous experience in academic and industrial environments, directly enhancing their cross-sectoral employability. Senior researchers build international co-supervision and co-funding networks. Technical and administrative staff acquire quality-management, regulatory-science, and project-management competences that benefit their home institutions upon return. All seconded staff gain structured mentoring and lasting membership of an international expert network, with impact measurable through post-secondment career-tracking surveys conducted at 12 and 36 months after mobility completion.

For participating organisations, AGRISWAP builds durable institutional capacity that outlasts the funded period. WUR and ISA-ULisboa deepen their industrial-translation pipelines, increasing the likelihood of follow-on applied research contracts and spin-out activities. FermenTech Italia gains access to frontier academic strain-engineering knowledge and to Brazilian microbial diversity, strengthening its competitive position in the growing precision-fermentation market. EMBRAPA strengthens its linkages to European food-technology markets and EU regulatory frameworks, facilitating future collaborative funding under EU–Brazil science and technology agreements. Long-term collaboration is formally institutionalised through a Joint Research Agreement signed at month 42, committing all partners to at least two post-project collaborative funding applications and to maintaining an open secondment pathway for a minimum of three years beyond project end.

At the societal level, the validated precision-fermentation protocols and regulatory roadmap generated through AGRISWAP secondments will contribute to faster and more cost-effective market entry for novel sustainable food ingredients in the EU, supporting Farm to Fork targets. All open-access publications, FAIR-compliant datasets, and the publicly available regulatory roadmap will be freely accessible to the global R&I community, multiplying impact well beyond the consortium and reducing duplication of effort across the sector.

### 2.2 Dissemination, Exploitation and Communication

AGRISWAP adopts a differentiated dissemination, exploitation, and communication strategy tailored to three distinct audiences, coordinated by WUR's dedicated communication office and reviewed annually by the Supervisory Board.

For the scientific community, the consortium targets a minimum of 12 open-access peer-reviewed publications over 48 months, at least four conference presentations per year at major food-biotechnology and bioprocess-engineering venues, and FAIR-compliant deposition of all experimental datasets in recognised public repositories. All publications will carry acknowledgement of MSCA funding and links to deposited data, maximising discoverability and reuse. A joint patent or utility-model application will be pursued for any protectable foreground IP identified during secondments, with FermenTech Italia leading exploitation planning for industrial scale-up and commercialisation pathways.

For industry and policy stakeholders, AGRISWAP will organise two open stakeholder workshops (months 18 and 36), targeting a combined attendance of at least 60 external participants drawn from European food industry associations, national food-safety agencies, and the EFSA advisory network.

A policy brief on the regulatory implications of precision-fermentation ingredients under EU Regulation 2015/2283 will be produced at month 40 and actively distributed to relevant European Commission directorates and national competent authorities.

For the general public, the consortium will maintain a multilingual project website (launched by month 3), produce a short video series explaining precision fermentation and its sustainability benefits in accessible language, and participate in at least four science-communication or public-engagement events per partner over the project lifetime, including science festivals, open-campus days, and online citizen-science platforms. These activities collectively ensure that the knowledge generated through AGRISWAP reaches and benefits audiences far beyond the four partner organisations.

### 2.3 Summary of Impact Indicators

| Indicator                                          | Target                                                  | Measurement                                                                |
|----------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------|
| Open-access peer-reviewed publications             | 12 over 48 months                                       | DOI records in OpenAIRE; annual count in progress reports                  |
| Person-months of secondment completed              | At least 300 of 360 maximum by month 42                 | Secondment certificates and timesheets verified in grant management system |
| Staff members completing cross-sectoral secondment | At least 20 individuals across all career stages        | Individual mobility logs and HR confirmation records                       |
| Gender balance among seconded staff                | At least 40% representation of under-represented gender | Annual Gender Action Plan monitoring report                                |
| FAIR datasets deposited in public repositories     | At least 8 datasets by month 48                         | DOI/accession numbers listed in DMP updates                                |
| Stakeholder workshop external participants         | At least 60 across two workshops                        | Registration records and post-event survey reports                         |
| Post-project collaborative funding applications    | At least 2 submitted within 24 months of project end    | Copies of submitted applications held by coordinator                       |

## SECTION 3 - QUALITY AND EFFICIENCY OF THE IMPLEMENTATION

### 3.1 Work Plan and Work Packages

| WP  | Title                                                 | Lead                                                    | PM | Duration |
|-----|-------------------------------------------------------|---------------------------------------------------------|----|----------|
| WP1 | Strain Engineering and Synthetic Biology Secondments  | Wageningen University & Research                        | 80 | M1-M36   |
| WP2 | Fermentation Process Optimisation and Scale-Up        | FermenTech Italia Srl                                   | 80 | M6-M42   |
| WP3 | Food Safety, Characterisation, and Regulatory Science | Instituto Superior de Agronomia, Universidade de Lisboa | 60 | M12-M48  |
| WP4 | Dissemination, Communication, and Exploitation        | Wageningen University & Research                        | 30 | M1-M48   |
| WP5 | Project Management, Ethics, and Sustainability        | Wageningen University & Research                        | 50 | M1-M48   |

#### WP1: Strain Engineering and Synthetic Biology Secondments

**Lead: Wageningen University & Research | Person-months: 80 | Duration: M1 - M36**

WP1 coordinates secondments in microbial cell-factory design, CRISPR-based genome editing, and metabolic flux analysis, directly addressing Objective O1. WUR researchers are seconded to FermenTech Italia to transfer and validate industrial strain-engineering workflows; EMBRAPA staff are hosted at WUR for advanced synthetic-biology training, integrating tropical microbial diversity into the consortium's strain library. This bidirectional mobility structure ensures that knowledge transfer is genuinely reciprocal and that no partner is positioned solely as a knowledge recipient. All secondees jointly document protocols in the shared digital laboratory notebook and co-author at least three peer-reviewed publications, generating durable open-science outputs that extend the impact of the secondments beyond the individuals involved.

T1.1: Academic-to-Industry Strain Engineering (WUR to FermenTech) - Two WUR researchers undertake secondments totalling 12 person-months at FermenTech Italia to transfer CRISPR-based metabolic-engineering workflows into a pilot-scale industrial context. Activities include strain adaptation to industrial media compositions, quality-system documentation of engineering procedures, and joint validation trials. Outputs feed directly into WP2 process optimisation activities.

T1.2: Tropical Biodiversity Prospecting (EMBRAPA to WUR) - EMBRAPA researchers undertake secondments totalling 8 person-months at WUR to apply high-throughput synthetic-biology screening tools to curated tropical microbial isolates. The resulting expanded strain library constitutes a unique resource unavailable in any European collection, directly supporting the beyond-state-of-the-art ambition of AGRISWAP and feeding candidate organisms into WP2.

T1.3: Joint Protocol Drafting and IP Documentation - All T1.1 and T1.2 secondees collaboratively draft standardised strain-engineering protocols in accordance with FAIR data principles, ensuring reproducibility and potential for broader community uptake. An IP assessment is conducted under the Consortium Agreement to classify all newly generated foreground IP and assign licensing pathways before protocols are finalised.

#### WP2: Fermentation Process Optimisation and Scale-Up

**Lead: FermenTech Italia Srl | Person-months: 80 | Duration: M6 - M42**

WP2 governs secondments addressing bioprocess design-of-experiments, fed-batch and continuous fermentation optimisation, and pilot-to-demonstration scale-up, directly serving Objective O2.

FermenTech Italia, as the sole partner with industrial-scale bioprocess infrastructure, leads this WP and provides the primary host environment for academic secondees. The WP also enables reciprocal industry-to-academia secondments, embedding industrial scale-up logic into academic predictive-modelling frameworks. Two target functional ingredients will be validated at pilot scale by month 42, providing the tangible scientific milestone that anchors the project's industrial-translation ambition. Brazil–Europe process benchmarking in T2.3 ensures that protocols developed are robust across



substrate compositions and supply-chain contexts.

T2.1: Academic-to-Industry Process Optimisation (WUR and ISA to FermentTech) - Researchers from WUR and ISA-ULisboa are seconded to FermentTech Italia (20 person-months combined) to co-develop optimised fed-batch protocols for two target precision-fermentation ingredients. Work includes statistical design of experiments, real-time process analytical technology integration, and preparation of technical data packages supporting future regulatory dossiers.

T2.2: Industry-to-Academia Scale-Down Modelling (FermentTech to WUR) - FermentTech Italia engineers are seconded to WUR (12 person-months) to embed industrial scale-up constraints and economic boundary conditions into WUR's predictive metabolic-modelling frameworks. This reverse-direction knowledge transfer ensures that academic models become industrially actionable and that future academic strain-engineering work is guided by real production economics.

T2.3: Brazil-Europe Process Benchmarking (EMBRAPA to FermentTech) - EMBRAPA staff are seconded to FermentTech Italia (8 person-months) to benchmark tropical-substrate fermentation conditions against European industrial standards and feedstock specifications. Results inform the feasibility of future supply-chain diversification and strengthen the scientific case for tropical-derived ingredients in European market applications.

### **WP3: Food Safety, Characterisation, and Regulatory Science**

**Lead: Instituto Superior de Agronomia, Universidade de Lisboa | Person-months: 60 | Duration: M12 - M48**

WP3 addresses the critical interface between scientific innovation and market readiness, directly serving Objective O3. It focuses on analytical characterisation of fermentation-derived ingredients, food-safety testing aligned with EFSA guidance, and systematic mapping of the EU novel-food regulatory pathway under Regulation (EU) 2015/2283. ISA-ULisboa leads, leveraging its dedicated food-safety infrastructure and regulatory expertise to host secondees from FermentTech Italia and EMBRAPA. ISA-ULisboa researchers are also seconded to WUR for advanced omics-based safety-assessment methodologies. The WP culminates in a publicly available regulatory roadmap and a policy brief - outputs designed to benefit the wider precision-fermentation sector, not only the consortium partners.

T3.1: Safety Characterisation Secondments (FermentTech to ISA-ULisboa) - FermentTech Italia technical staff are seconded to ISA-ULisboa (10 person-months) to access specialised food-safety analytical infrastructure, including allergenicity, toxicology, and compositional profiling capabilities. Secondees build in-house regulatory-science capacity transferable to FermentTech's future product development programmes, reducing dependence on external contract research organisations.

T3.2: Regulatory Pathway Mapping and Policy Brief (ISA-ULisboa and WUR) - A joint secondment activity (8 person-months combined between ISA-ULisboa and WUR) produces a comprehensive regulatory roadmap for precision-fermentation ingredients seeking authorisation under EU Regulation (EU) 2015/2283. The roadmap identifies data requirements, likely assessment timelines, and common submission pitfalls, and is condensed into a policy brief targeted at food industry associations and national competent authorities.

### **WP4: Dissemination, Communication, and Exploitation**

**Lead: Wageningen University & Research | Person-months: 30 | Duration: M1 - M48**

WP4 ensures that the knowledge generated through AGRISWAP secondments reaches and benefits audiences well beyond the consortium. It manages open-access publication coordination, FAIR data management, stakeholder workshops, the project website and public-outreach programme, and exploitation of protectable foreground results. Short administrative secondments support cross-partner dissemination coordination, embedding a communication culture across all four organisations. All activities are coordinated by WUR's dedicated communication office and reviewed annually by the Supervisory Board to ensure alignment with evolving consortium outputs and external stakeholder needs.

T4.1: Publication Pipeline and FAIR Data Management - Coordination of manuscript development and submission across all WPs, ensuring full open-access compliance and MSCA acknowledgement in all publications. FAIR-compliant experimental datasets are deposited in recognised public repositories with persistent identifiers. Annual bibliometric and open-science compliance reports are submitted to the Supervisory Board.

T4.2: Stakeholder Workshops and Public Communication - Organisation of two open stakeholder workshops (months 18 and 36), each targeting a minimum of 30 external participants from industry, regulatory bodies, and civil society. Annual public-engagement events per partner - including science festivals and open-campus days - are scheduled throughout the project. A multilingual project website (maintained from month 3) and a short video series on precision fermentation and sustainable food provide accessible entry points for general audiences.

## WP5: Project Management, Ethics, and Sustainability

**Lead: Wageningen University & Research | Person-months: 50 | Duration: M1 - M48**

WP5 provides the governance and compliance infrastructure that enables all scientific work packages to operate efficiently and in accordance with the grant agreement, EU ethics requirements, and Horizon Europe Open Science obligations. Governance is structured around a Supervisory Board (one senior representative per partner), a Scientific Coordination Committee (WP leads), and a dedicated Project Manager at WUR. WP5 also owns the Gender Action Plan, the Data Management Plan, ethics self-assessments, and the preparation and signature of the post-project Joint Research Agreement, directly serving Objective O4. Adaptive management is ensured through quarterly Supervisory Board calls, an internal mid-term review at month 24, and a formal secondment-plan update at month 25.

T5.1: Governance and Financial Management - Day-to-day coordination by the WUR Project Manager, including financial reporting to the European Commission, maintenance of the Consortium Agreement, and operation of the secondment tracking and reporting system. Quarterly Supervisory Board meetings monitor progress against milestones and enable timely reallocation of person-months where needed.

T5.2: Ethics, Gender, and Open Science Compliance - Annual ethics self-assessment reports submitted per grant agreement obligations, covering human-subject data protection, biosafety considerations, and responsible research and innovation principles. The Gender Action Plan is reviewed annually, with corrective measures activated if the 40% representation target for under-represented genders is not on track. The Data Management Plan is updated at months 6, 24, and 42 to reflect evolving data outputs.

T5.3: Mid-Term Review and Long-Term Sustainability - An internal mid-term review at month 24, led by the Supervisory Board with input from all WP leads, assesses secondment flows, research progress against Objectives O1–O4, and financial expenditure. A revised secondment plan is submitted at month 25 if reallocation of person-months is warranted. The Joint Research Agreement is drafted from month 36 onwards and signed by all partners at month 42, committing the consortium to at least two post-project collaborative funding applications and a minimum three-year open secondment pathway.

### 3.2 Consortium Composition

| Organisation                                            | Country     | Type                                         | Role        | Description                                                                                                                                          |
|---------------------------------------------------------|-------------|----------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wageningen University & Research                        | Netherlands | Academic                                     | Coordinator | Consortium Coordinator; leads WP1, WP4, WP5; hosts secondees in synthetic biology and process modelling; oversees open-science and gender compliance |
| Instituto Superior de Agronomia, Universidade de Lisboa | Portugal    | Academic                                     | Partner     | Leads WP3; food-science and food-safety expertise; hosts industrial and third-country secondees; sends researchers to WUR and FermenTech             |
| FermenTech Italia Srl                                   | Italy       | Non-Academic (SME)                           | Partner     | Leads WP2; industrial bioprocess infrastructure; hosts academic secondees; leads IP exploitation and scale-up validation                             |
| EMBRAPA Food Technology                                 | Brazil      | Non-Academic Research Centre (Third Country) | Partner     | Contributes tropical microbial biodiversity and agri-food bioprocess expertise; participates in WP1 and WP2                                          |

|  |  |  |  |                                                    |
|--|--|--|--|----------------------------------------------------|
|  |  |  |  | secondments; hosts EU partners on reciprocal stays |
|--|--|--|--|----------------------------------------------------|

The AGRISWAP consortium is uniquely constituted to deliver its scientific and innovation objectives in a way that no smaller, mono-sectoral, or nationally confined partnership could replicate. Each partner occupies a distinct, non-overlapping niche: WUR's depth in systems biology and metabolic engineering, ISA-ULisboa's dedicated food-safety infrastructure and regulatory expertise, FermentTech Italia's industrial-scale bioprocess capability and product-validation track record, and EMBRAPA's unparalleled access to tropical microbial biodiversity and agri-food biotechnology know-how are individually world-class and collectively irreplaceable. The absence of any single partner would create a gap that could not be filled by redistribution of tasks among the remaining three.

The inter-sectoral structure - two academic institutions, one SME, and one non-academic research centre - ensures that knowledge flows in multiple directions simultaneously, avoiding the asymmetry of purely academic-to-industry or purely North-to-South knowledge transfer. The international reach spanning three EU Member States plus Brazil creates a circular knowledge-sharing dynamic - academic-to-industry, industry-to-academia, European-to-Brazilian, and Brazilian-to-European - that directly generates the novel scientific combinations described in Section 1.3. The SME partner FermentTech Italia ensures that scientific advances are continuously tested against industrial and market realities, while EMBRAPA's participation provides a geopolitical and biodiversity dimension that strengthens Europe's global competitiveness in sustainable food biotechnology. Together, these features make AGRISWAP an exemplary realisation of the MSCA Staff Exchanges programme's vision of transformative inter-sectoral and international collaboration.

### 3.3 Milestones

| ID  | Title                                                                   | WP       | Due | Verification                                                                                 |
|-----|-------------------------------------------------------------------------|----------|-----|----------------------------------------------------------------------------------------------|
| MS1 | Consortium Agreement and Data Management Plan finalised                 | WP5      | M3  | Signed CA submitted to Project Officer; DMP uploaded to grant management system              |
| MS2 | First cohort of secondments initiated (at least 5 staff in mobility)    | WP1, WP2 | M9  | Secondment certificates and host-institution confirmation letters                            |
| MS3 | Mid-term review completed and secondment plan updated                   | WP5      | M24 | Mid-term review report approved by Supervisory Board and shared with Project Officer         |
| MS4 | Pilot-scale fermentation protocol validated for first target ingredient | WP2      | M30 | Technical report with process data reviewed by Scientific Coordination Committee             |
| MS5 | Stakeholder Workshop 2 held and policy brief drafted                    | WP3, WP4 | M36 | Workshop proceedings, attendance list, and draft policy brief circulated for external review |
| MS6 | Joint Research Agreement signed by all partners                         | WP5      | M42 | Signed JRA submitted to coordinator; copy provided to Project Officer                        |

### 3.4 Deliverables

| ID   | Title                                                                                           | WP  | Due | Type                                  | Dissemination |
|------|-------------------------------------------------------------------------------------------------|-----|-----|---------------------------------------|---------------|
| D1.1 | Standardised Strain-Engineering Protocol Handbook                                               | WP1 | M30 | Report                                | Public        |
| D2.1 | Pilot-Scale Fermentation Optimisation Report (two target ingredients)                           | WP2 | M42 | Report                                | Confidential  |
| D3.1 | Regulatory Pathway Roadmap for Precision-Fermentation Ingredients under EU Regulation 2015/2283 | WP3 | M40 | Report                                | Public        |
| D3.2 | Policy Brief: Regulatory Implications of Precision Fermentation for EU Food Safety Agencies     | WP3 | M42 | Other                                 | Public        |
| D4.1 | Project Website (launch version)                                                                | WP4 | M3  | Websites, patents filing, videos etc. | Public        |
| D4.2 | Stakeholder Workshop Reports (x2, months 18 and 36)                                             | WP4 | M38 | Report                                | Public        |
| D5.1 | Data Management Plan (initial submission and updates)                                           | WP5 | M6  | Data Management Plan                  | Sensitive     |
| D5.2 | Final Project Report including Secondment Statistics and Gender Action Plan Assessment          | WP5 | M48 | Report                                | Public        |

### 3.5 Resources and Budget Summary

| Cost Category        | Amount (EUR) |
|----------------------|--------------|
| Personnel Costs      | 0            |
| Subcontracting       | 0            |
| Travel & Subsistence | 0            |
| Equipment            | 0            |
| Other Direct Costs   | 756000       |
| Indirect Costs (25%) | 324000       |
| TOTAL                | 1080000      |

### 3.6 Risk Management

| ID | Risk                                                                                                                                 | Likelihood | Impact | Mitigation                                                                                                                                                                                                                     |
|----|--------------------------------------------------------------------------------------------------------------------------------------|------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R1 | Visa delays or travel restrictions prevent planned secondments, particularly for Brazil-EU exchanges.                                | Medium     | High   | Secondment plan includes buffer months and allows splitting stays; alternative host-partner pairings pre-agreed; visa processes initiated at least 3 months in advance of each secondment.                                     |
| R2 | Disagreement over ownership or licensing of jointly generated foreground IP delays exploitation and strains partner relations.       | Medium     | High   | Consortium Agreement with detailed IP provisions concluded before month 3; FermenTech leads IP audits at months 12 and 36; background IP registers submitted by all partners at project start.                                 |
| R3 | Key technical staff departure at FermenTech Italia reduces industrial expertise available for secondments.                           | Low        | Medium | At least two FermenTech staff per thematic area trained in each protocol; all procedures documented in the shared laboratory notebook; coordinator notified within one month of any key-staff departure.                       |
| R4 | Scientific underperformance: pilot-scale targets for one precision-fermentation ingredient not achieved within planned timeline.     | Low        | Medium | Scientific Coordination Committee reviews progress quarterly; fallback ingredient candidates identified in secondment plan; TRL-equivalent targets revised at mid-term review rather than suppressing outputs.                 |
| R5 | Gender imbalance: recruitment pipeline fails to achieve 40% representation target for under-represented gender among seconded staff. | Medium     | Low    | Gender Action Plan activated from month 1; sending institutions contractually required to report gender composition of secondment nominees; targeted outreach and mentoring applied where imbalance detected at annual review. |