



# FindingPheno

Project Number: 952914

Project Acronym: FindingPheno

**Project Title:** Unified computational solutions to disentangle biological interactions in multi-omics data

## D1.1 Plan for Dissemination and Exploitation of Project Results

WP1 TRAINING, DISSEMINATION, AND OUTREACH

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## 1 Executive summary

This Plan for Dissemination and Exploitation of Project Results (PDER) will analyse FindingPheno stakeholders to identify target audiences, define a set of key messages, outline relevant communication channels and plan related project activities coordinated with the project outputs. The plan will be designed to maximise project visibility and disseminate results and outputs during and after the lifetime of the project. Outputs from the PDER include publications and presentations in scientific, industrial and public outlets, social media posts and short informative videos. The PDER will be updated at least annually.

FindingPheno's major objective is to develop better computational solutions for the challenges posed by the vast amount of multi-omics data that is currently being produced. These solutions will be made widely known and applicable across the biotechnology industry with specific focus on the role of the microbiome in biological processes. FindingPheno will share our models with the entire research sector and provide easy to implement and deploy software solutions to the biotech industry. Results will be disseminated to target relevant professional stakeholders through a combined five stakeholder events, webinar training events and through paper presentations/demonstrations at scientific and commercial conferences alongside communication on social media and the internet. The PDER will also include actions for public outreach to disseminate the overall results of FindingPheno to societal stakeholders.

The PDER was initiated by the coordinator, Outreach Manager and Innovation Manager at the beginning of the project and circulated to partners for input. **The finalised draft PDER was then accepted by the Lead Principle Investigator from each partner during M3.** It will be updated when necessary and presented at the annual Steering Committee (STC) meetings.

## 2 Introduction

This document has been prepared in the frame of Task 1.1 – *Develop and implement Plan for Dissemination and Exploitation of Project Results* – of the Work Package (WP) 1 – *Training, dissemination, and outreach*. The main objectives of this plan include:

- Raise the visibility of FindingPheno activities;
- Facilitate the mapping and planning for activities;
- Disseminate project results and outputs during the project and present an outline of expected impacts after project end;
- Support the measurement of FindingPheno outreach activities (i.e. demonstrating impact via measurable indicators) to fill possible gaps and maximise the impacts;
- Support user-centric design principles for all tools developed in FindingPheno by providing academic, commercial and industrial feedback and viewpoints into the project; and
- Increase uptake and user acceptance of all FindingPheno outputs.

FindingPheno's major objective is to develop better computational solutions for the challenges posed by the vast amount of multi-omics data that is currently being produced. Our main communication aim is for these solutions to become widely known and applicable across the biotechnology industry, with specific focus on the role of the microbiome in biological processes.

## 3 Communication and dissemination

### 3.1 Information and data to be disseminated

As no results will be available at the beginning of the project, during the first months the strategy will focus on raising awareness of the project among the different stakeholders to create a wide audience base for future disseminative activities. Then, as results and deliverables become available for exploitation, the disseminative activities will include more developed and technical content. A stakeholder risk and involvement analysis has



identified key messaging objectives for each group (Figure 1, Table 1). Messages will then be developed with input from all partners and targeted to the different audiences and Key Opinion Leaders (KOLs) to support overall project strategy and maximise impact.

### 3.2 Targeted groups

The following audience groups have been identified and mapped according to their interest and influence within the project to identify the major communication needs of each group (Figure 1).

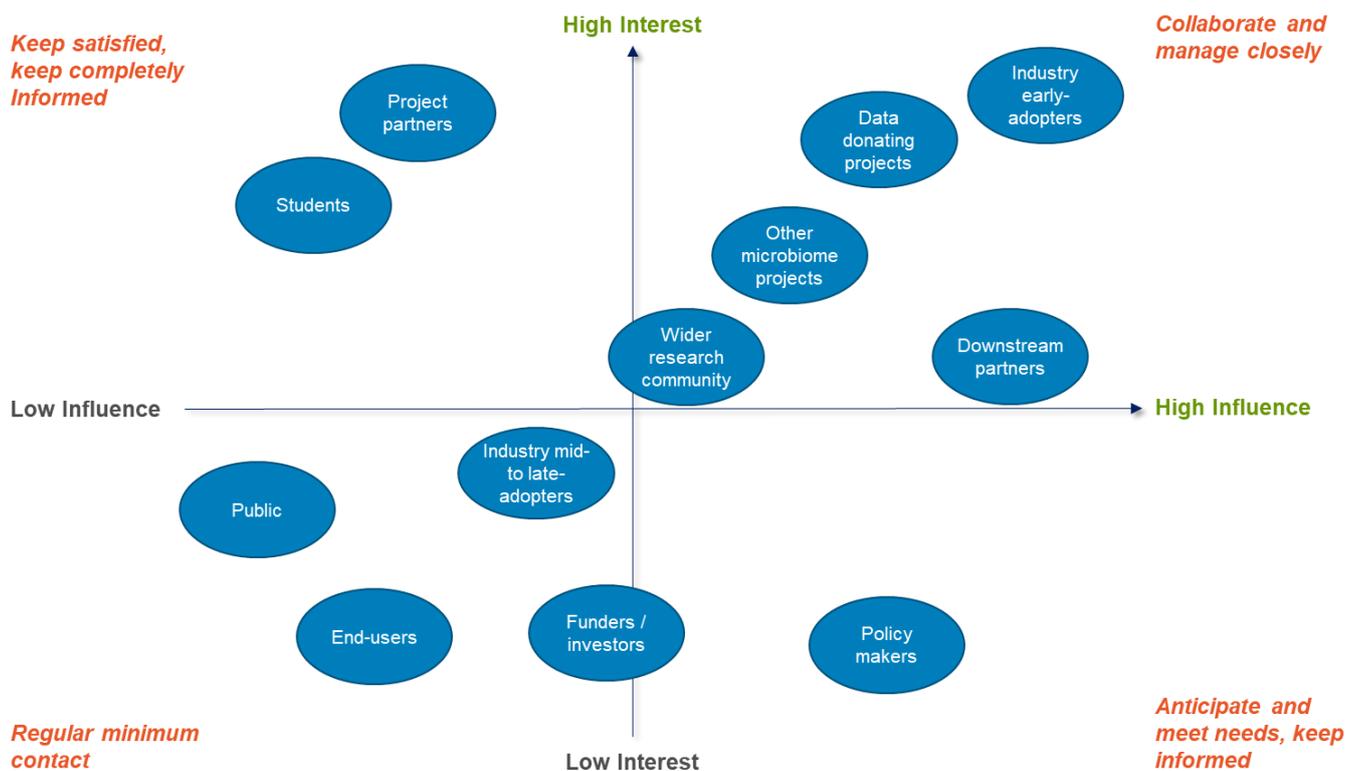


Figure 1: Stakeholder mapping.

A full risk analysis was then conducted to identify and clarify the key messaging objectives for each group and potential messaging strategies defined for each (Table 1). These messaging objectives and strategies will be refined as we continue through the project based on audience feedback and internal learnings and the PDER updated annually to reflect the improved strategies.



**Table 1: Stakeholder risk analysis and messaging strategy**

Audience	Risk Analysis	Potential Risks	Main Stakeholders Identified	Messaging Objectives	Messaging Channels
<b>Upstream partners / data donating projects</b>	<p><b>Profile:</b> moderate influence, high interest.</p> <p><b>Risk level:</b> low.</p> <p>Our risk analysis has shown that these are important building blocks of our solution but that they pose low risk in terms of overall success of the project.</p>	Data is not available when needed. Problems with data set quality confound our analysis. They scoop us on method development or publications.	HoloFood, Bac4CroP, DD-DeCaF, MaizeGDB, HappyFish, HoloFish, ImprovAFish, HOSTgutINTERACT.	Maintain and expand access to high quality data inputs. Find project synergies to increase reach and develop future collaborations. Mobilise KOLs and multipliers with capacity to influence other potential collaborators. Avenue for continued consultation and feedback.	Stakeholder meetings. Social media engagement and cross-posting. Direct contact. Website. Peer reviewed publications. Conference presentations. Participation in H2020 and industry events. External newsletter.
<b>Downstream partners / distributors</b>	<p><b>Profile:</b> high influence, moderate interest.</p> <p><b>Risk level:</b> moderate.</p> <p>Our risk analysis has shown that these are important building blocks of our solution whose support we need to maintain throughout the project period.</p>	No longer want to distribute FindingPheno tools. Our tools are replaced by something else. Low uptake by their users. Poor integration into their offerings. Poor end-user training by distributors.	EMBL, Qiagen, Bioconductor, Biopython.	Strengthen resilience and redundancy of supply. Align with FindingPheno’s mission statement and culture. Transfer knowledge about functionality and use cases. Increase visibility and market uptake.	Internal communication. Stakeholder meetings. Social media engagement. Direct contact. Peer reviewed publications. Conference presentations. Business case studies and whitepapers. Participation in industry events and trade fairs.
<b>Industry early adopters</b>	<p><b>Profile:</b> high influence, high interest.</p> <p><b>Risk level:</b> medium.</p> <p>Our risk analysis has shown that these are part of the key stakeholders whose support we need to gather. Resources need to be allocated to attracting early-adopters to secure growth and build reputation among all potential user groups.</p>	Lack of interest in our tools. Do not know how to use the tools. No positive business case found for our projected use cases.	Food and feed producers, Agritech companies, Enzyme companies, Probiotic companies, Metabolic modelling applications.	Adapt to different end-user needs. Provide avenue for regular feedback. Respond rapidly to changing demands. Gain visibility. Increase market pull. Mobilise KOLs and multipliers with capacity to influence other potential end-users. Obtain real world evidence on performance.	Stakeholder meetings. Social media engagement. Website. Direct contact. Video. Peer reviewed publications. Conference presentations. Business case studies and whitepapers. EMBASSY cloud and CLC workbench. Participation in industry events and trade fairs. External newsletter. Training workshops and webinars.



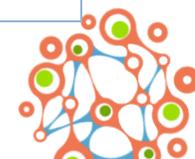
<p><b>Industry mid-to late-adopters</b></p>	<p><b>Profile:</b> moderate influence, moderate interest. <b>Risk level:</b> low. Our risk analysis has shown that these are part of the key stakeholders whose support we need to gather. Moderate resources need to be allocated to attracting these users to secure growth and build reputation among all potential user groups.</p>	<p>Lack of interest in our tools. Do not know how to use the tools. No positive business case found for our projected use cases.</p>	<p>Ecologists, Pharma industry, Human health applications, Industrial fermentation.</p>	<p>Lay groundwork for future adaptation of our tools to different end-user needs. Gain visibility. Increase market pull. Mobilise KOLs and multipliers with capacity to influence other potential end-users. Provide avenue for continued consultation and feedback.</p>	<p>Stakeholder meetings. Website. Peer reviewed publications. Conference presentations. Business case studies and whitepapers. EMBASSY cloud and CLC workbench. Participation in industry events and trade fairs. External newsletter. Video. Training workshops and webinars.</p>
<p><b>Other microbiome projects</b></p>	<p><b>Profile:</b> moderate-high influence, moderate-high interest. <b>Risk level:</b> low. Our risk analysis has shown that these are part of the key stakeholders whose support we need to gather. Resources need to be allocated to attracting these stakeholders in order to build reputation among the research community, secure future collaborations and maximise impact.</p>	<p>Lack of interest in our project. Other projects consider us competitors instead of synergist partners. Lack of differentiation makes FindingPheno look derivative. Eco-chamber effect reduces wider impact. Too early publication may result in new IP being non-patentable. Too late publication can risk being scooped.</p>	<p>CIRCLES, SIMBA, MASTER, GLOMICAVE, PhyMo, FISHPROBIO, ROOTPHENOBIOME, EcoStack, AqualIMPACT, VIROPLANT, B-GOOD, MicrobiomeSupport, Elixir, EPPN2020.</p>	<p>Find project synergies to increase reach and develop future collaborations. Gain visibility. Academic and career development of FindingPheno early career researchers (ECRs). Mobilise KOLs and multipliers with capacity to influence other potential collaborators. Provide avenue for continued consultation and feedback. Increase understanding of the hologenomic framework.</p>	<p>Stakeholder meetings. Social media engagement and cross-posting. Direct contact. Website. Peer reviewed publications. Conference presentations. Open source software packages. Participation in H2020 and industry events. External newsletter. Video. Training workshops and webinars.</p>
<p><b>Wider research community</b></p>	<p><b>Profile:</b> moderate influence, moderate interest. <b>Risk level:</b> Low. Our risk analysis has shown that these are important building blocks of our solution but that they pose low risk in terms of overall success of the project.</p>	<p>Lack of interest in our project. Too early publication may result in new IP being non-patentable. Too late publication can risk being scooped.</p>	<p>Microbiome researchers, Data scientists and bioinformaticians, Evolutionary biologists, Universities and research institutions.</p>	<p>Strengthen partnerships. Gain visibility. Develop new ideas and collaborations. Mobilise KOLs with capacity to influence other potential collaborators. Academic and career development of FindingPheno ECRs. Increase understanding of the hologenomic framework.</p>	<p>Peer reviewed publications. Conference presentations. Open source software packages. Social media engagement. Website. Press releases. University teaching. Training workshops and webinars.</p>



<b>Students</b>	<p><b>Profile:</b> low influence, moderate-high interest.</p> <p><b>Risk level:</b> Low.</p> <p>Our risk analysis has shown that these are important stakeholders for achieving our public good outreach goals but that they pose low risk in terms of overall success of the project.</p>	<p>Lack of interest in our project. Misunderstand project goals and outcomes.</p>	<p>Under-graduate or graduate programmes in microbiome or data science research,</p> <p>Primary and secondary school student and teachers.</p>	<p>Gain visibility. Raise awareness of problems caused by climate change and food security. Educate about the importance of the microbiome to all life and increase understanding of the hologenomic framework.</p>	<p>Peer reviewed publications. Conference presentations. Social media engagement. Open source software packages. University teaching and student secondments. Public lectures. Video. Training workshops and webinars. Teaching materials.</p>
<b>Public</b>	<p><b>Profile:</b> low influence, moderate-low interest.</p> <p><b>Risk level:</b> Low.</p> <p>Our risk analysis has shown that these are important stakeholders for achieving our public good outreach goals but that they pose low risk in terms of overall success of the project.</p>	<p>Lack of interest in our project. Misunderstand project goals and outcomes.</p>	<p>The public.</p>	<p>Gain visibility. Raise awareness of problems caused by climate change and food security. Educate about the importance of the microbiome to all life and increase understanding of the hologenomic framework. Convince them of the social and environmental benefits from changing their behaviour with the support of FindingPheno outputs.</p>	<p>Social media engagement. External newsletter. Website. Press releases. Lay-person articles and summaries. Public lectures and other outreach activities. Training workshops and webinars.</p>
<b>End-users / practitioners</b>	<p><b>Profile:</b> low influence, low interest.</p> <p><b>Risk level:</b> low.</p> <p>Our risk analysis has shown that these stakeholders are important to realising the long-term impact of our solution but that they pose low overall risk to project success. Limited resources should be allocated to laying the groundwork towards implementing new farming practises after project completion.</p>	<p>Lack of interest in our tools. Do not know how to use the tools. Do not want to change their behaviour.</p>	<p>Farmers,</p> <p>Farming consultancies,</p> <p>Ag suppliers,</p> <p>Agroecologists,</p> <p>Environmental lobby groups.</p>	<p>Adapt to different end-user needs. Develop avenues for end-user feedback. Educate about the importance of the microbiome in food production. Convince them of the social and environmental benefits from changing their behaviour with the support of FindingPheno tools and other outputs.</p>	<p>Social media engagement. External newsletter. Website. Press releases. Articles in industry publications. Lay-person summaries. Participation in industry events and trade fairs. Targeted presentations. Public outreach.</p>



<p><b>EU, regional, &amp; local policy-makers</b></p>	<p><b>Profile:</b> moderate-high influence, low interest. <b>Risk level:</b> low.</p> <p>Our risk analysis has shown that policymakers have important learnings and knowledge that they can both gather and share through our findings. As such they are an important stakeholder whose involvement poses low risk.</p>	<p>Changing framework conditions that can contribute to a reduction in predictability such as changes in legislation.</p>	<p>Governments, NGOs, Standards and regulatory organisations.</p>	<p>Provide evidence and technical advice for policy development on using multi-omics data in food production and other industries for improving sustainability.</p>	<p>External newsletter. Website. Press releases. Participation in policy-maker events. Targeted presentations. Public outreach.</p>
<p><b>Funding bodies / third party investors</b></p>	<p><b>Profile:</b> moderate influence, low interest. <b>Risk level:</b> low during project, moderate after project.</p> <p>Our risk analysis has shown that these stakeholders pose low risk to project success. However, their risk to future activities is higher and resources should be allocated to building positive relationships with key financial stakeholders ready for future applications.</p>	<p>Current funding is delayed or compromised by missed reporting. Poor project outcomes reduces chance of future funding.</p>	<p>Horizon Europe, National funders (e.g. Innovation Fund Denmark), Eureka, European Institute of Innovation &amp; Technology, European Investment Bank, InnovFin.</p>	<p>Raise project visibility. Fulfil reporting requirements. Increase chances of future funding or financial investments to expand on and fully exploit the current research project.</p>	<p>Website. Participation in funder or investor information events. Targeted presentations. Funding applications. Project reporting. Public outreach.</p>
<p><b>Project partners</b></p>	<p><b>Profile:</b> low-moderate influence, high interest. <b>Risk level:</b> low.</p> <p>Our risk analysis has shown that project participants are the most important building blocks of our project but that they pose low overall risk to success due to their high engagement. Resources should be allocated to maintaining their interest and engagement in the project to keep this risk low.</p>	<p>Project conflict or a partner stops participating. Lack of progress during the project. Delays in reaching key milestones. Low quality work.</p>	<p>All project partners: UCPH CER UTU CF Qia ChrH NBio</p>	<p>Internal communication to maintain interest and alignment with project goals. Strengthen relationships. Build visibility for individual partners outside of the project. Academic and career development. Increase chances of future funding or financial investments.</p>	<p>Internal communication via website intranet. Monthly internal newsletter. STC and other meetings. ECR journal club. Partner involvement in external events.</p>



### 3.3 Communication channels, tools and activities

#### 3.3.1 Logo, visual identify and communication materials

To give the project a visual identity, a FindingPheno logo was designed for use on the website, presentations, posters, documents, etc (Figure 2).



Figure 2: FindingPheno logo.

We are in the process of compiling a communication materials dossier for use by project partners to give a consistent style and format to all dissemination activities. This includes FindingPheno logo files as above, a brand colour scheme and draft presentation templates (Figure 3), participant logos, and a customised partner map (Figure 4). These materials will continue being developed and shared between partners throughout the project.

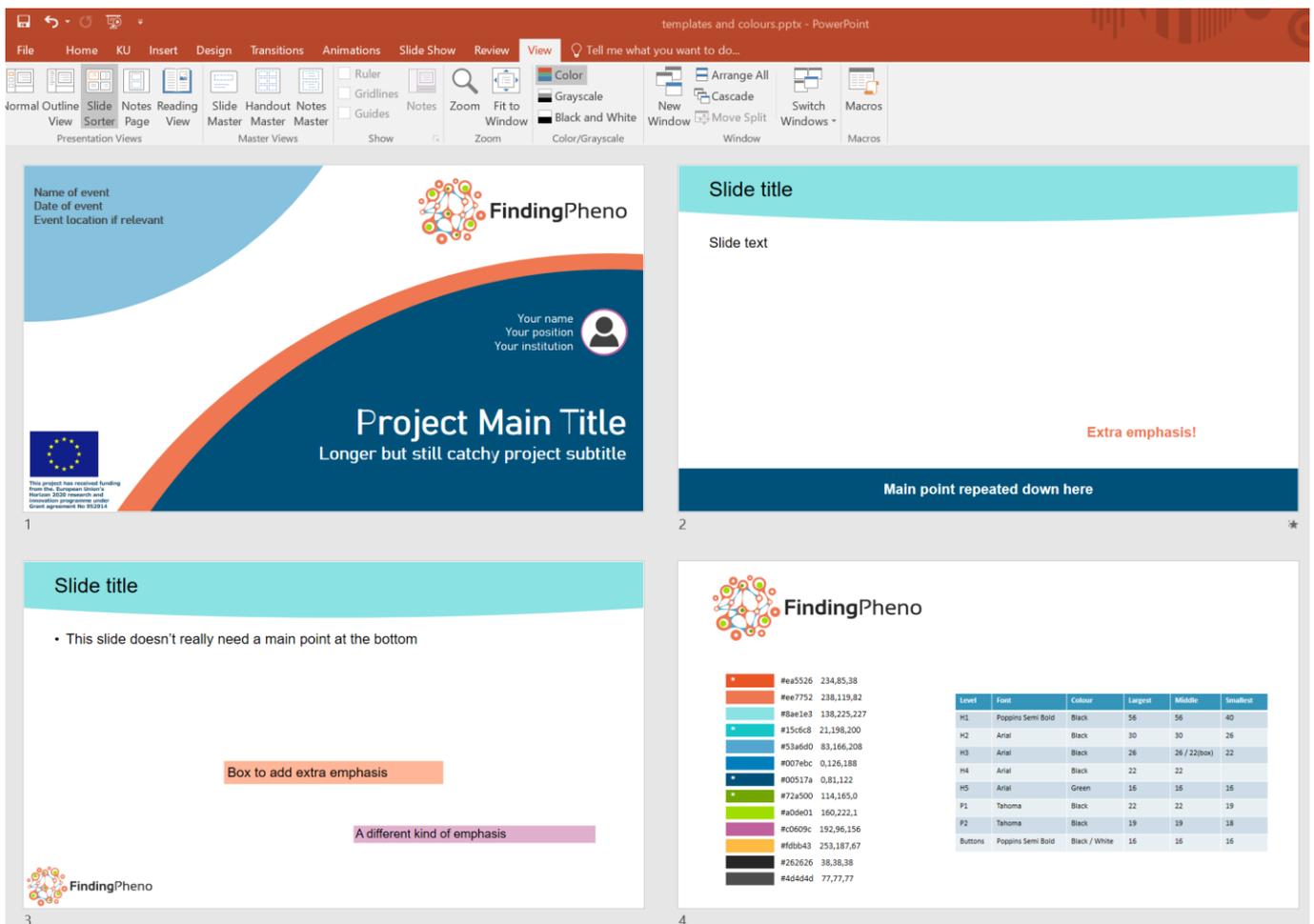


Figure 3: Draft ppt templates, including project brand colour scheme.





Figure 4: Customised map showing partner logos and locations.

### 3.3.2 Project website

The project website ([www.findingpheno.eu](http://www.findingpheno.eu), Figure 5) is aimed to reach all audiences of the FindingPheno project, with the greater number of visits expected from those groups that are more technical and related to the subject matter of the project. The website is the focal point of passive dissemination and active online communication and has the following main communication objectives:

- To provide relevant and current information to a wide audience.
- To ensure information is provided in an accessible and usable manner.
- To be a common documentation base for all the partners containing all project documentation and deliverables.
- To be an information database of all the activities and deliverables carried out by the FindingPheno project and its partners.
- To provide a secure intranet for internal project communication and document dissemination between partners.

The website contains a description of the project and the consortium, a blog where articles about the project will be published every month, an events agenda specifying the public activities (e.g. training courses, conference presentations and outreach talks) organised or attended by FindingPheno, and all public deliverables produced by the project. We plan to expand the website as the project progresses with relevant project communications and outputs such as a list of publications derived from the project, papers presented at conferences, links to the training resources developed by UTU, EMBL and CER, links to the databases in which data

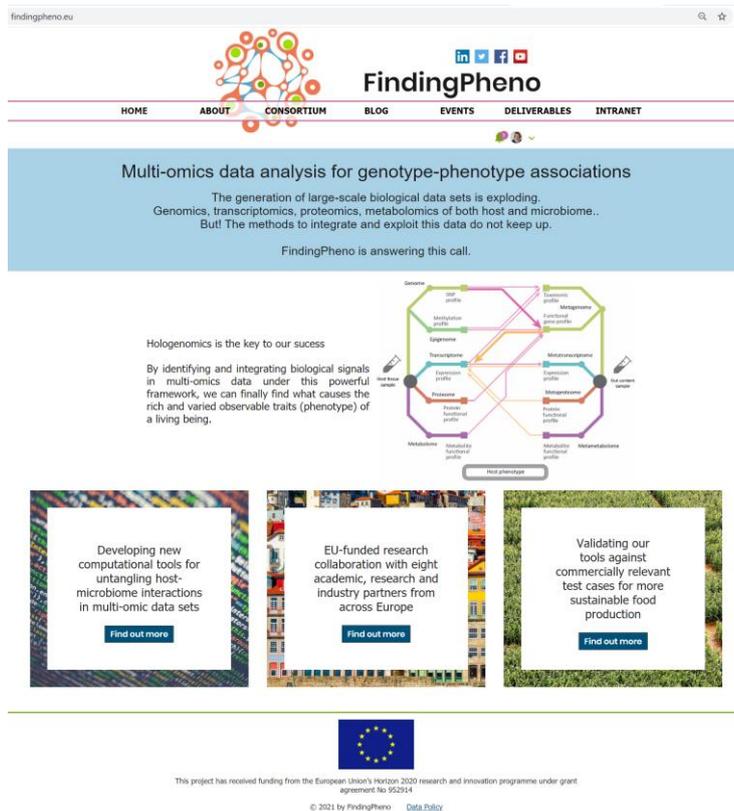


Figure 5: Screenshot of the findingpheno.eu home page.



sets are stored, and other relevant links to external resources. The website is managed and hosted by UCPH (WP1 leader) under the responsibility of the FindingPheno Outreach Manager and will be regularly updated during the project. After the project, it is planned that the website will be maintained for at least 3 years post-project and thereafter as long as it remains relevant and useful.

### 3.3.3 Social media

FindingPheno owns project profiles on social media to increase our impact and generate straight communication channels for audience interactions through different tools depending on the communicative objective. Social media networks are a powerful tool to achieve a multiplier promotional effect on communication activities. Therefore, the FindingPheno profiles will be constantly updated to show FindingPheno as an active and interesting project. The social media management will be developed following the [social media guide for EU funded R&I projects](#).

The presence of the project on social media is fundamental to accomplish our communication and dissemination objectives and it will be used as a relevant tool to reach third parties, the research community, and to interact with the general public. The availability of new project results will be communicated on social media, informing about project progress and effect on the food, agritech and biotech industries, disseminating the project outcomes, and creating a scientific hub for those interested in collaborating with the project. It will be crucial to reach a high level of followers to have a real impact.

The FindingPheno Outreach Manager at UCPH is responsible for social media management, including creating and maintaining the profiles, planning content programmes and strategies, and following up on posted content. The Outreach Manager will take charge of content generation for all social media platforms with collaboration and input from other consortium members. The consortium members will also cross-post relevant information and content to their own social media profiles for increased visibility. UCPH will maintain an internal publications calendar feed with information from all the consortium partners on events such as assistance to or participation in workshops or conferences, the main milestones of the project, and the broadcast of the project on mass media. This will be used to plan and generate content in a strategic manner to ensure an efficient and effective social media presence.

#### 3.3.3.1 Twitter

The @FindingPhenoEU Twitter account (Figure 6) will be used to create a community with experts in the scientific fields related to the project and share with them the results of the project. Twitter is a useful tool for establishing expertise within a specific subject area while also interacting with experts and scientists across different fields, as well as reaching a wider audience such as end-users or the general public. We aim to position FindingPheno as experts in big data and multi-omic / hologenomic analysis methods while also linking into the wider context of microbiome research, sustainable food production, and biotechnology industries. We will make regular announcements about project events such as conferences, workshops, publications, or other milestones, while also retweeting information relevant to our project and subject areas.

Twitter is also an important source of information coming into the project. The Outreach Manager will monitor relevant accounts and hashtags for new ideas, publications, events, industry groups, or potential collaborators and share interesting information with other project participants via the regular internal newsletter.

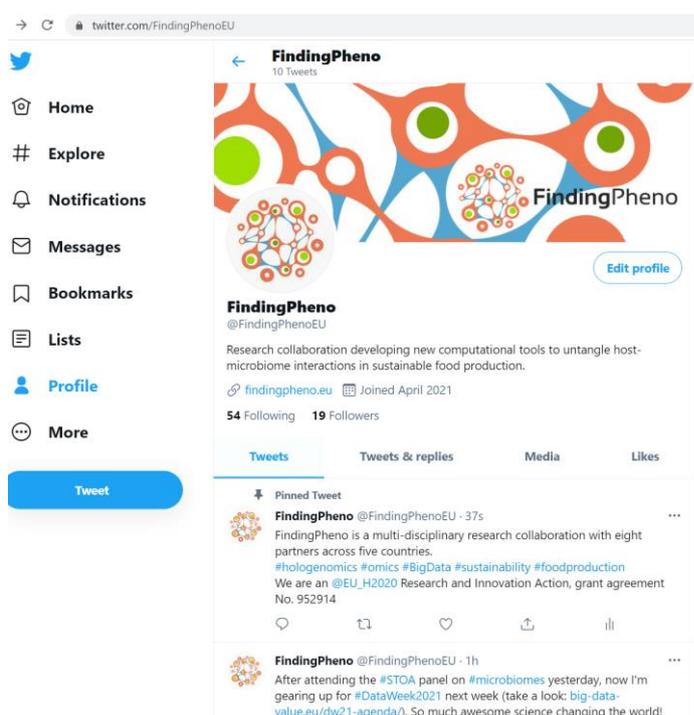


Figure 6: Screenshot of @FindingPhenoEU twitter profile.



### 3.3.3.2 LinkedIn

LinkedIn is a professional social network and will be used to reach a business, industrial and scientific audience. This profile (Figure 7) will share news and articles about the progress and outcomes of the project and will be a crucial tool for the dissemination of all major project achievements.

### 3.3.3.3 YouTube

YouTube will be used to upload audio-visual content that will be shared on other platforms.

### 3.3.3.4 Facebook, Instagram

These profiles have been claimed to prevent someone else taking them but are not currently being updated as they do not align with the communication objectives for FindingPheno. We will consider activating one or both accounts in the future if our content needs change. For example, we may use the Instagram account for project members to showcase their photos taken during conference travel or research secondments once the corona pandemic situation changes.

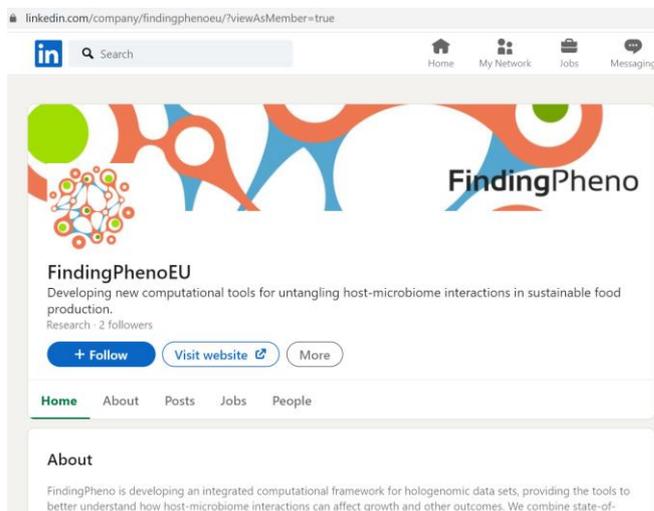


Figure 7: Screenshot of FindingPhenoEU LinkedIn page

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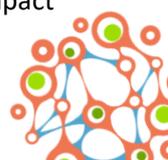
### 3.3.4 Scientific publications

FindingPheno will produce two main types of knowledge: i) computational tools, and ii) novel insights into the role of microbiomes in shaping host phenotypes in multiple food production systems. Both types of knowledge will be disseminated in the form of scientific publications targeted at peer-reviewed journals. We expect to produce at least 10 core high-impact scientific articles within the project period, with a selection of preliminary titles and target journals listed in Table 2. In addition to these core papers, we anticipate numerous spin-off papers on subsets of the methods developed, including opinion and review articles, as well as method notes relating to development of models to analyse multi-omics data sets.

Table 2: List of tentative articles and journals. Deliverables: D

Article Topic	Target Journal	WP(s)
A review on computational models for multi-omics data integration (D3.1)	Natur. Rev. Genet.	WP3
Integrating multi-omics data outperforms GWAS for predicting phenotypes (D3.2)	Bioinformatics	WP3
Scaling structural causal models for multi-omics data (D3.3)	Bioinformatics	WP3
Dynamic time series analysis of multi-omics landscapes in host-microbiome studies (D4.1)	PLoS Comp Biol	WP4
Biological metadata improves inference from multi-omics data (D5.2)	Natur. Genet.	WP5
Boosting gut health in chicken through probiotics: potentials and pitfalls	Call	WPs 2-4
The functional profile of the salmon gut microbiota is linked to host genotype	Microbiome	WPs 2-4
Maize root-stem microbiomes are explained by tissue specific gene expression	MBio	WPs 3-5
Evolutionary perspective on host-microbiome interactions (D5.3)	Genetics	WP5
Review on how to integrate multi-omics in animal food production systems	Trends in Biotech	WPs3-5
Review on how to integrate multi-omics in agriculture production	Natr. Plants	WPs 3,5

Publications will be led by the different university partners. All consortium members will be offered the opportunity to contribute and co-author any manuscript resulting from research carried out in FindingPheno. Eligibility of co-authorships will follow the Vancouver protocol and will be considered on a case by case basis. Most of the articles will be finished and submitted during the last 2 years of the project, when all the data has been analysed with the new statistical methods (WPs 3-6) and while commercial partners are evaluating the market and business impact



of the new solutions (WP7). We will ensure all publications are made openly available already upon submission by storing the preprints in public repositories, such as biorXiv.org, and as open access using either Green or Gold open access channels upon publication.

### 3.3.5 Mass media and press releases

To complement the appearance in specific media, achievements and milestones of the project will be released and published in the project website and delivered to mass media around Europe. In particular, we take advantage of UCPH's experienced Press Office for assisting us to broadcast major developments of the project (e.g. article publications on demonstration results; e.g. from WP6). The Outreach Manager and the Press Office will prepare the press releases with technical contribution of the FindingPheno partners when needed, then disseminate the releases at national and international levels as considered appropriate. Beyond the UCPH Press Office, we will take advantage of similar press offices and PR teams associated with all the other partner organizations. The Outreach Manager will coordinate press releases with offices from other partners to ensure communication actions are carried out in an efficient and coordinated way across the EU. All media releases will include the FindingPheno logo and EU logo and statement and will be recorded in the FindingPheno dissemination log by the Outreach Manager.

In addition to press releases, FindingPheno will also make use of the EC's media channels as shown in Table 3.

**Table 3: Potential EC media channels for FindingPheno messaging.**

Media	Description	Key Message Categories
<b>Horizon Magazine</b> <a href="http://horizon-magazine.eu/">http://horizon-magazine.eu/</a>	HORIZON is the EU Research & Innovation e-magazine. It covers the latest developments in EU funded research and innovation, communicating the priorities and achievements of EU-funded research, its impact on citizens' lives, and its contribution to the EU goals of smart and sustainable growth.	This channel will be used to inform about the benefits and progress that FindingPheno will generate in Europe, including any debates opened by our project.
<b>Project stories</b> <a href="https://ec.europa.eu/programmes/horizon2020/en/newsroom/551/">https://ec.europa.eu/programmes/horizon2020/en/newsroom/551/</a>	Webpage listing articles about selected EU-funded research projects which led to breakthroughs, contributed to economic growth and creating jobs, and tackled societal challenges.	This channel will be used to inform about the benefits and progress that FindingPheno will generate in Europe, including any debates opened by our project.
<b>research*eu results magazine</b> <a href="https://cordis.europa.eu/research-eu/en">https://cordis.europa.eu/research-eu/en</a>	This print magazine features highlights from the EU-funded research and development projects. It is published 10 times per year in English and covers mainly the research areas of biology and medicine, social sciences and humanities, energy and transport, environment and society, IT and telecommunications, industrial technologies and space.	This channel will be used to inform about the existence of FindingPheno project, explain its main challenges, and inform about our progress.
<b>CORDIS Results Pack</b> <a href="https://cordis.europa.eu/results-packs/en">https://cordis.europa.eu/results-packs/en</a>	Multilingual collections of up-to-date articles that each focus on a specific theme published by the European Commission, bringing the readers results that they can apply in their domains.	FindingPheno will contact this media channel to reach a wider audience with our project results.
<b>Horizon Results Platform</b> <a href="https://ec.europa.eu/info/funding-tenders/opportunities/portal/">https://ec.europa.eu/info/funding-tenders/opportunities/portal/</a>	A matchmaking tool allowing the publication of Key Exploitable Results to promote them to targeted audiences – investors, stakeholders, policy makers, potential business partners, etc.	FindingPheno will utilise this platform in the later stages of the project to expand our commercial and industrial exploitation opportunities.



<a href="#">screen/opportunities/horizon-results-platform</a>		
<b>Events on the CORDIS website</b> <a href="https://cordis.europa.eu/search?q=contenttype%3D%27event">https://cordis.europa.eu/search?q=contenttype%3D%27event</a>	This website displays research-related conferences and events.	FindingPheno public conferences and events will be displayed on this website to increase our reach.
<b>Conferences and events organised by the European Commission</b>	The European Commission co-organises a variety of conferences. These may include exhibition areas or sessions.	FindingPheno will work to be part of EC Conferences talking about the successes of this project and resulting benefits for Europe.

### 3.3.6 Project newsletter

To keep the interested audiences informed about the progress of the project, an external newsletter will be produced containing the main news and information about the project. The first edition is planned for M6 and will be released quarterly thereafter. This newsletter will include the latest results of the project, news from the partners, upcoming events, events where project consortium members assist, etc. The FindingPheno Outreach Manager is responsible of managing and delivering this document and will work with all other project partners to ensure the existence of enough material for the newsletter. The newsletter will be defined according to the European legislation in this sense and will take the form of an email newsletter forwarded to all the subscribers who have opted in through the website, e-mail or other methods (e.g. via recommendation from the consortium members).

### 3.3.7 Events and meetings

#### 3.3.7.1 Conferences and exhibitions

FindingPheno partners will present at timely and relevant scientific conferences where the focus will be on the underlying mathematical and statistical models developed by our researchers. Likewise, FindingPheno partners will showcase the FindingPheno solution and case studies at industry focused conferences and exhibitions. We have budgeted for 6 conference presentations for each partner and a selection of tentative academic and industry conferences where FindingPheno partners expect to present are listed in Table 4. Partners presenting results from FindingPheno at meetings and conferences will share an abstract with the consortium ~2 weeks before submission to allow all partners the opportunity to comment on the content.

**Table 4: List of tentative academic and industry conferences relevant to FindingPheno.**

Article Topic	Target Journal	WP
Co-evolution of animals and microbiomes	European Soc. of Evol. Biol. (ESEB)	WP2
Genome-metagenome integration using machine learning	Eur. Conf. on Comp. Biol. (ECCB)	WP3
Host molecular landscape selects microbiota species	Intl. Conference on Microb. Ecol. (ISME)	WP4
Public data multi-omics: lessons from tomatoes and honey bees	Society for Mol. Biol. & Evol. (SMBE)	WP6
Modifying root microbiomes to improve maize yield	Sust. Agricult. & Food Syst. Sum. (SAFS)	WP2
A multi-omic solution to poultry challenges	World Poultry Congress (WPC)	WP2
A Bayesian framework to model multi-omics	Intelligent syst. in Mol. Biol. (ISMB)	WP3
Genome-microbiome tailoring in aquaculture	World Aquaculture (WA)	WP2
Host genomes control microbiomes in animal models	European Microbiology Conference (EMC)	WP4
A metagenomic software solution for multi-omics	Bio-IT World Conference & Expo (Bio-IT)	WP2
Computational & statistical approaches for integrated multi-omics data	Symposium at e.g. ECCB	WP5



### 3.3.7.2 Industry stakeholder events

During the project we will organize five different stakeholder events as listed in Table 5. The Innovation Manager and Outreach Manager will help organise these events together with the respective hosting partner. These activities will create a forum about the application of multi-omic research opportunities to improve food production and/or quality, in which FindingPheno partners will meet relevant industrial end-users to discuss their current and future needs (i.e. market pull). Our goal is to develop new solutions of real use to industry stakeholders and that continue to address essential societal challenges beyond the project period.

**Table 5: Planned stakeholder events in FindingPheno.**

Event (Target Month)	Purpose	Target stakeholders	Respons.
Stakeholder synergy meeting (M8)	Soliciting Stakeholder input and creating synergy with other H2020 microbiome projects	Industry end-users, academia microbiome research groups, H2020 microbiome projects	UCPH
Midway stakeholder symposium (M24)	Sharing early FindingPheno results, dissemination of developed models	Microbiome researchers, H2020 microbiome projects	UTU
Webinar on FindingPheno's solutions on the Embassy cloud	Dissemination and Tutorial for a do-it yourself plug and play implementation of FindingPheno's solutions on EMBL's Embassy cloud	Microbiome research groups, SMEs with their own multi-omics data	EMBL
Stakeholder end-user dissemination workshop	Academia multi-omics and microbiome research groups, industry stakeholders	Industry end-users, governmental research facilities	Qiagen, NBio
Final FindingPheno symposium	Showcasing FindingPheno's solutions	Academia multi-omics and microbiome research groups, industry stakeholders	UCPH

The first event aims to establish direct contact with relevant stakeholders from early in the project so that we can fully implement their current needs into our workflow and objectives throughout the project period. This contact is maintained and expanded on during the second stakeholder event, a midway symposium presenting preliminary results to mainly other microbiome researchers and research projects, including many H2020 investments, along with key industry participants.

Then, during the last year of the project, we will run events to directly reach out to our established stakeholder network. We will first conduct an end-user dissemination workshop inviting external end-users of the FindingPheno solution from food and biotech industries across Europe and globally. The focus will be on training the end-users on i) WHY they should adopt the FindingPheno solution into their business, and ii) HOW to use the solution as implemented in the renowned and user friendly CLC workbench by Qiagen. Participants will learn about "What can FindingPheno do for you?" while being taught by the researchers behind the new statistical models as well as training staff from Qiagen, who are used to train their more than 50,000 customers in using their CLC software package. This will be supplemented with an EMBL webinar with more hands on teaching for how to actually use the new solutions via EMBL's cloud services.

Then the FindingPheno Consortium will host a symposium with the tentative title "*Computational and statistical approaches for integrating multi-omics data in host-microbiome systems*" at a relevant conference such as European Conference on Computational Biology (ECCB, expected in Sept. 2024, see Table 4). This symposium will be targeted towards the scientific community and biotechnology industry working on host-microbiome research where the main focus will be to communicate more broadly to both academic and industrial stakeholders our biological findings from the included data sets for salmon, chicken, maize, tomato, and honey bees. We aim to introduce the challenges of applied research in host-microbiome interactions, present the solutions to these challenges developed in FindingPheno, and generate new collaborations to continue building on FindingPheno outcomes.



### 3.3.8 Public outreach and education

Communication and outreach is a main priority by all FindingPheno partners as we all realise the importance of making scientific progress visible to a general public. Hence, raising societal awareness of science based solutions is of utmost importance. Our Outreach Manager will coordinate public outreach activities targeting the general public, with strong focus on teachers and students at all levels. All project partners will participate in public outreach and, where available, we will collaborate with local communication teams, e.g. the EMBL public engagement team which has strong networks with local schools and represents a unique opportunity to inspire a new generation of students to adopt life-science careers.

FindingPheno will adopt different communication channels depending on the content communicated and the target group. These will include use of existing public events as ideal platforms for engaging the public through interactive booths and public lectures. Relevant events taking place near our partners include 'Kulturnatten' ([www.kulturnatten.dk](http://www.kulturnatten.dk)) in Copenhagen (DK), the Open Data Day (<https://www.okf.fi/>) in Helsinki (FI), and the Science Festival (<https://www.sciencefestival.cam.ac.uk/>) in Cambridge (UK). FindingPheno will further benefit from our tight links to the data donor projects HoloFood (UCPH, EMBL, Chr. Hansen) and Bac4Crop (UCPH, Chr. Hansen) by piggy backing on the dissemination activities already planned in these projects.

#### 3.3.8.1 Project videos

In service of our public outreach initiative, we will produce two short videos during the course of the project. The first, tentatively slated for year 2, will be targeted to school children with the aim of exposing them to the role of microbiomes in biology and explaining FindingPheno's efforts to reveal the importance of microbiomes in the biotech industry. The second video will be produced towards the conclusion of FindingPheno with the aim of reaching industry end-users and disseminating the results and findings from FindingPheno.

#### 3.3.8.2 University level training events

We will capitalise on all our partners' ongoing teaching activities to broaden our communication target groups. For this, our broad geographic distribution in Europe and our extensive international contacts will be a major asset as many of our partners are already heavily invested in teaching BA and Masters students at their respective institutions and most also have short intense courses at the PhD and postdoc levels with broad international attendance. Our partner Assoc. Prof. Leo Lahti (UTU) is organising a PhD-level research training seminar in Pune (India) in 2021 where the first FindingPheno outcomes can be used in the training. In addition, UTU will organise a hackathon on microbiome research in Finland in 2022. Starting in 2021, UCPH will offer an [annual PhD course on hologenomics](#) led by FindingPheno co-PI, Assoc. Prof. Morten Limborg, providing a solid theoretical and technical background to this novel research field

We will also capitalise on any opportunity to reach out to potential commercial end-users throughout the project. Here, our partner Qiagen is perfectly situated to easily showcase FindingPheno via their continuous educational and promotional activities by running webinars and publishing whitepapers and tutorials describing their software solutions. In addition, our partner EMBL is the leading bioinformatics research organisation in Europe and will use its extensive network of scientists in both academic and industrial research to advocate the use of FindingPheno solutions through cloud software and webinars on the use of these solutions.

### 3.4 Action plan & timing

The Global Action Plan includes the main events and actions to be carried out during the FindingPheno project execution, most of them involving all the partners. Many of the activities and actions included in the Action Plan were already defined in the FindingPheno Grant Agreement and therefore the allocation of responsibilities among partners and the respective budget are already partially defined. The first version of the Action Plan is provided below (Table 6) along with more detail for the planned events (Table 7). Each suggested action will be evaluated during the execution of the project to ensure that actions fit the objectives of the project at all times and the plan will be continuously updated.





**Table 7: Communication actions driven by FindingPheno partners**

Type	Deliverable	Abbreviation	Respons.	Description
Internal Event	D8.1	KOM	UCPH	Kick Off Meeting minutes
External Event	D1.3	StSyn	UCPH	Stakeholder Synergy Meeting
Report	D2.1	DMP	EBI	Data Management Plan
Internal Event		ML train	UTU	Training: machine learning and statistical models for multi-omics data
Report	D8.2	STC1	UCPH	Steering Committee Meeting minutes
Video			UCPH	Video about microbiomes, aimed at children
Internal Event		EmC train	EBI	Training: use of embassy cloud in FindingPheno
Report	D1.4	DTE1	UCPH	Dissemination, training and exploitation report
Internal Event		MM train	CER	Training: mechanistic models of microbiomes
Report	P1	P1	UCPH	First period reporting
External Event		MidSyn	UTU	Midway Stakeholder Symposium
Report	D8.3	STC2	UCPH	Steering Committee Meeting minutes
Report	D8.4	STC3	UCPH	Steering Committee Meeting minutes
Report	D1.5	DTE2	UCPH	Dissemination, training and exploitation report
Report	P2	P2	UCPH	Second period reporting
Report	D8.5	STC4	UCPH	Steering Committee Meeting minutes
Video			UCPH	Video about FindingPheno results aimed at industry
External Event	D7.3	CLC	Qia+Nbio	CLC workbench end-user training
External Event	D2.4	EmC	EBI	Embassy Cloud public webinar
Report	D1.6	DTE3	UCPH	Dissemination, training and exploitation report
External Event		FinSymp	UCPH	Final Symposium

### 3.5 Monitoring

The main objective of monitoring and evaluation is to ensure a high-quality communication strategy execution.

The project has an overall evaluation strategy to ensure the above-mentioned quality. However, a separate monitoring focused on communication activities is vital as the impact of those activities contribute to the successful implementation of the project. It is important that this evaluation is carried out on a continuous basis to ensure:

- An effective impact assessment and update or redefinition of communication activities.
- Ensure the quality of the communication activities carried out.

Monitoring can be broken down into sub-sections:

- Performance measurement
- Impact
- Reporting
- Monitoring and assessment



### 3.5.1 Performance measurement

The execution of this plan will be measured according to the following indicators:

- The level of acknowledge of the project around Europe in two levels: the main FindingPheno’s stakeholders and the general public.
- Website and Social media activities: a careful monitoring of FindingPheno website hits will be done, taking into account an analysis of the impact of events (e.g. publication of a new article). Using web tools for analysing visitor traffic and giving a complete picture of number of visitors, visited pages, geographical coverage including the audience’s needs and interest.
- Number of articles or interviews in non-scientific publications or other public outreach activities.
- Number of external contact requests: a contact form on FindingPheno website will allow outside people to contact the consortium and/or sign up for the external newsletter. A specific form field asking for how they have heard about FindingPheno and analysing the type of request will help identify where or how our communication has been efficient and reinforce it in other areas where needed.
- Number of attendees to the project events.

### 3.5.2 Impact

Impact is a tool to ensure that the project objectives are being accomplished through a selection of tailored activities. Impact with regard to communication activities can help to understand the reach and sustainability of the project’s results. Furthermore, the impact can also be used to measure and assess the promotion activities in terms of their relevance, quality, and promotion channel.

Impact is often measured through indicators; both quantitative and qualitative should be considered for the activity/action. These indicators are included in the table below:

**Table 8: Key Performance Indicators (KPIs)**

Indicator	Year 1 Feb 2022	Year 2 Feb 2023	Year 3 Feb 2024	Year 4 Feb 2025	Source & methodology
Accumulated number of peer reviewed articles published					Dissemination activity registry
Accumulated number of other external communication activities					Dissemination activity registry
Accumulated number of oral presentations					Dissemination activity registry
Accumulated number of relevant events in which participants participate					Dissemination activity registry
Accumulated number of Twitter followers					Twitter analytics
Accumulated number of followers on LinkedIn					LinkedIn registry
Accumulated number of views of the video					YouTube registry
Accumulated number of newsletter subscribers					Internal subscriber list
Accumulated number of newsletters sent					Dissemination activity registry
Accumulated findingpheno.eu webpage views					Google Analytics



Accumulated number of external contact requests					Dissemination activity registry
Accumulated number of articles posted on the FindingPheno blog					Dissemination activity registry
Average blog post views					Wix Analytics
Qualitative engagement with blog posts, e.g. comments, reposts, mentions on other social media					Wix Analytics
Accumulated number of participants in webinars and workshops					Participant lists

### 3.5.3 Reporting

To facilitate an accurate monitoring and assessment of the communication activities, and to understand the impact of the actions carried out, it is necessary for all partners to register the activities that they implement. Therefore, a dissemination register will be maintained in the website intranet where all partners will report the communication activities or publications (articles, publications on blog, etc.) made by each consortium member. This register will include both pre-planned and ad-hoc activities. Therefore:

- All partners must take into account the communication procedures described in the PDER.
- All partners should report their activities in the dissemination register within one week of conclusion of the activity.
- All partners should save evidence of the activities conducted.

A summary of the activities conducted along with KPIs from section 3.5.4 above will be included in the Dissemination, Training and Exploitation Reports (D1.4-6, see [Table 7](#)) and reported at the STC meetings.

### 3.5.4 Monitoring and assessment

Performance monitoring is a continuous process that will assess the overall T1.1 activities and results against our goals as described in section 2, but will also evaluate each individual activity and its impact on the project as a whole. Each major event will be assessed within one month of conclusion for immediate feedback, and all KPIs and other activity outcomes will be summarised and assessed at least twice per year to identify longer term trends. These assessments aim to ensure the communication action plan and stakeholder strategy is being followed, to identify any delays or other issues, and to track which activities have the biggest stakeholder impact (both in quantitative and qualitative terms). Questions asked will include:

- Did the activity provide knowledge about the results to potential new end users?
- Did the activity form the basis for new collaboration or partnership?
- How can the activity be improved, i.e. how can we do it better next time?
- What was successful relating to the activity, i.e. what should be do again?

Any improvements or lessons learned will be used to continuously refine our activity planning, to update the PDER at least once per year, and will be included in the Dissemination, Training and Exploitation Reports as above.

## 4 Exploitation of results

### 4.1 Exploitable results generated

Although the main activities in FindingPheno will centre around the research in WPs 3-5, we will also generate knowledge and experience of direct relevance to our three different industry partners and their respective products and markets. Common to all three partners is the fact that many bio-based industries, including in particular the



food production sector, are now starting to acknowledge the importance of microbiomes in shaping phenotypes of almost any multicellular organism. In essence, host associated microbiomes are increasingly considered as the third ‘missing’ component to the long standing “genotype x environment = phenotype” paradigm. However, many applied stakeholders are reluctant to implement novel science-based ideas deeply rooted in basic evolutionary biology as it is often perceived as being too costly and complex. Likewise, many consumers are opposed to food, cosmetics and other bio products that are based on chemical fertilizers, additives or pest control, whereas, according to Chr. Hansen’s market analysis, fermentation and microbial solutions are considered natural. The research performed in FindingPheno will support these natural solutions and thus help improve social acceptance of products based on our findings by raising awareness of scientific facts at the cost of social prejudices.

In the industry there is a significant lack of understanding of the potential buried in applying microbiome science into practical applications. The “too costly” or “too complex” needs to be converted to an “understanding of opportunity” by being able to understand complex associations and translate them into targeted commercial development.

## 4.2 Management of the project results

FindingPheno is committed to following the FAIR principles for research data. Detailed actions will be described in the Data Management Plan (DMP, D2.1) to be delivered at M6 of the project. Research data will be managed in accordance with national policies and guidelines and the European Code of Conduct for Research Integrity. Expert guidance and courses on research data management will also be provided by the Department for Research Support at Copenhagen University Library. Costs for the data generation and initial curation have already been covered by the projects HoloFood and Bac4Crop. In FindingPheno we have allocated adequate resources under computational resources to cover costs related to data transfer and data storage.

The molecular data (DNA sequences, RNA sequences, enzyme data, and metabolite data) used in FindingPheno will be deposited in public European databases, as specified in Table 9, and will be publicly accessible when the related scientific articles initially describing the data generation are published by the donor projects. However, all data will be available to partners within FindingPheno from the beginning of the project through our direct collaboration with the donor projects. Importantly, different multi-omics datasets from the same species in each case study are linked via an umbrella BioProject identifier, and datasets arising from the same sample will be linked among different data repositories using a BioSample identifier.

**Table 9: Overview of research data collected and analysed in FindingPheno**

Data type	Model system	Database where data is stored	Responsible
Host DNA sequences	Salmon, Chicken, Maize	ENA	EMBL
Host RNA sequences	Salmon, Chicken, Maize	ENA	EMBL
Microbiome DNA sequences	Salmon, Chicken, Maize	ENA/MGnify	EMBL
Microbiome RNA sequences	Maize	ENA/MGnify	EMBL
Metabolomes	Salmon, Chicken, Maize	MetaboLights	EMBL
Enzyme data	Maize	Custom database	Chr. Hansen
Biological metadata	Salmon, Chicken, Maize	BioSamples	EMBL

We will ensure all journal publications from FindingPheno are made openly available already upon submission by storing the preprints in public repositories, such as biorXiv.org, and as open access using either Green or Gold open access channels upon publication. Expenses to cover 20 Gold open access publications have been included in the budgets for partners (UCPH, UTU, CER, CF, EMBL) expected to lead publications.



### 4.3 Individual partner exploitation plans

Industry partners will build on the showcasing of our new framework in the high-profile commercial systems chicken, salmon, maize, tomato and honey bees (WPs 2 and 6) to develop specific business models for capitalising on the project. Despite the potentially significant revenues expected by each partner in their preliminary business model analysis, we do not foresee any IPR issues during the execution of FindingPheno for the following reasons:

- FindingPheno will build on already existing data sets that are generated to be deposited in open access databases. Hence, IPR based on these data sets is not relevant.
- All new computational methods and analysis workflows developed during FindingPheno will be deposited through EMBL's Embassy cloud and made available under open licenses such as MIT. Open licensing will ensure unambiguous handling of the IPR issues regarding the distributed digital resources.

