PathoGelTrap

New Blue Revolution through a pioneering pathogen-trapping technology based on bioselective hydrogel-forming proteins

H2020 – FET OPEN - Challenging Current Thinking

Deliverable No. 5.1

Communication and Dissemination Plan

PathoGelTrap™
Sustainable Prevention in Aquaculture

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Document Control

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Reviewers	SmartWater
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Version	**Date**	**Notes**
V1.0	24/09/2020	Initial version
V 2.0	26/01/2021	Final reviewed version 6 months
V 3.0	17/05/2021	!2 month review

Table of Contents

Executive Summary

This deliverable elaborates the PathoGelTrap dissemination & communication plan (DCP) that will help maximize the impact of the project.

PathoGelTrap's DCP is aligned with the PathoGelTrap global project objectives, namely: To demonstrate the proof of concept of PathoGelTrap as a sustainable technology for disease control and prevention in aquaculture. By doing so, the project aims to develop the next generation of self-assembling biosensing nanomaterialWithin this context, PathoGelTrap's DCP is to highlight the most innovative research aspects to be brought by PathoGelTrap, in summary:

- **To design PathoGelTrap Liquid as a selective flocculant pathogen blocker**
- **To develop bio-recognizing tools for aquatic environment thanks to the flocculation capabilities offered by the liquid droplet state.**
- **To develop PathoGelTrap Filter as a bioselective filter for trapping pathogens.**

Achievement of all these objectives is to be supported by the following DCP planned activities:

- Scientific publications;
- Conferences within the field of Aquaculture, Lipids, Health Management, Fish Phisiology.
- Tradeshows.

The PathoGelTrap project will reach out to a large number of experts, and promote the project's outcomes in a way that will allow them to be practically implemented.

The document covers:

- Dissemination channels and tools (benchmarks and key performance indicators);
- Communication with key stakeholder groups throughout the project;

It will be complemented by the rest of deliverables foreseen under WP5:

D5.2. Annual report on project's results in communication and dissemination, including materials (CSIC, delivery month 36)

D5.3. Plan for exploitation of results &IPR management (SMARTWATER, delivery months 12, 24, 36)

D5.4. Annual report from SmartWater Academy (SMARTWATER, delivery months 24, 36)

List of acronyms/abbreviations

D= Deliverable
DMP= Data Management Plan
DCP= Dissemination & communication plan
EC= European Commission
EU= European Union

IP= Intellectual Property
IPR= Intellectual Property Rights
KPI= Key Performance Indicators
P= Dissemination and communication phase
WP= Work Package

Glossary of terms

Term	Explanation
Target Audience	Group for which PathoGelTrap communication or dissemination is targeted.
Dissemination[1]	The public disclosure of project results tailored to experts that may exploit/reuse project results
Communication	Reaching out to society and communicating about the project and its results to a multitude of audiences, including the media and the public
Exploitation	The use of project results for any purpose (further research, development and commercial exploitation, policy support, education, standards, etc.)
Key messages	The main points PathoGelTrap wants target audiences to hear and remember.
Stakeholder	A relevant actor (persons, groups or organisations) who: (1) might be affected by the project; (2) have the potential to implement the project's results and findings; and, (3) have a stated interest in the project fields.
Visual identity	Graphical identity and other visual components (such as logo, colour scheme, fonts) used in PathoGelTrap communication/dissemination tools (e.g. web, printed materials, report and presentation templates).

[1] EC definitions taken from https://www.iprhelpdesk.eu/sites/default/files/EU-IPR-Brochure-Boosting-Impact-C-D-E.pdf

1. Introduction to project, the DCP and its objectives

PathoGelTrap DCP aims to communicate, divulge and disesseminate the objectives and findings of the PathoGelTrap project and involve the different stakeholders.

Coming up with radically new ideas based on excellent science and being able to materialize them with real benefits for society is a tremendous challenge. It not only relies on the capability and inspiring potential of the researchers, but on the suitability and synergy of other factors of a very different nature: societal perception, economic/political context, ethics, or its matching with real social needs. The PathoGelTrap Communication and Dissemination Plan (DCP) sets the strategy used by PathoGelTrap to ensure that expected goals are achieved, and aims at supporting in overcoming the above-mentioned challenges.

The overall strategy focuses on defining the *what, when* and *how* we will convey key messages and outcomes of the project to experts, how we want to engage them in order to make an impact in our science fields and transfer knowledge and results in order to enable others to use and take up PathoGelTrap's results for exploitation. The primary focus of PathoGelTrap's dissemination and communication activities lies on communicating with specialists in the different S&T fields related with the project from academia and industry, while the secondary focus lies on informing the general public about project developments. Finally, the plan focuses in managing strategically all IP resulting from the project, in order to pave the path towards scaling up the potential impact in society and industries.

The DCP has been organized into sections to guide partners in communicating the project key messages, disseminating results and in using the necessary tools to achieve the strategic and quantitative goals of PathoGelTrap. The document covers:

1. General dissemination and communication plan (section 2), specifying the main target groups, key messages and planned DCP phases along the project lifetime;
2. Dissemination channels and tools (section 3), including cooperation with key stakeholder groups throughout the project;
3. Communication strategy and activities (section 4);
4. Key performance indicators in terms of dissemination and communication efforts and reach gained towards maximizing the impact from PathoGelTrap (section 5).

2. PathoGelTrap target stakeholder groups and key message for each. Overall calendar.

To plan impact effectively, it is needed to:

Figure 1: Pathway to impact.

In accordance to the guidelines by the Economic and Social Research Council in UK[2], in order to maximize impact one must:

- Identify key stakeholders / audiences;
- Identify how they will benefit from PathoGelTrap;
- Identify how we will ensure they have the opportunity to benefit, for example through organizing public events; conferences; interaction with the media.

Figure 2 together with Table 1 represent our version of the Impact Summary for PathoGelTrap, specifying the main audiences and how each will benefit from the project (these benefits will drive the definition of key messages during dissemination and communication activities).

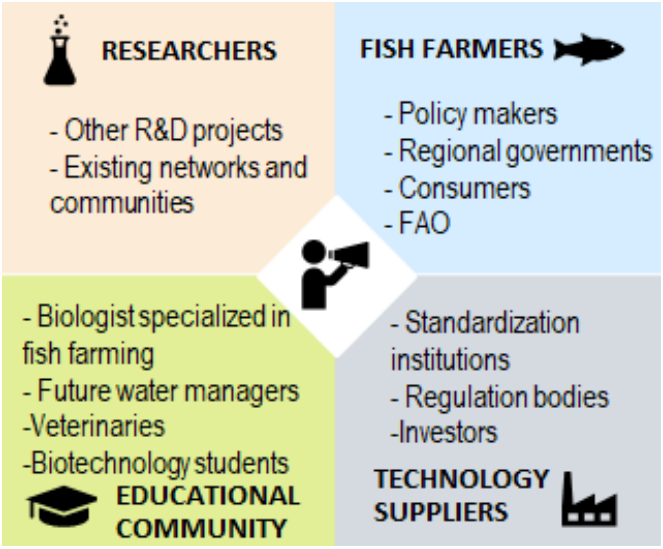

Figure 2: PathoGelTrap target groups in terms of Dissemination & Communication.

[2] http://www.esrc.ac.uk/funding-and-guidance/impact-toolkit/what-how-and-why/pathways/

Table 1: PathoGelTrap's impact summary

Key stakeholder / audience group	Main benefit from PathoGelTrap / Key message
RESEARCHERS	Validation of concept of LCR-AFB constructed chimeras to trap selected pathogens into a liquid droplet -like scaffold formed by the LCR protein.
Other R&D projects	Sinergies with other applications and technologies
Existing networks and communities	Expanding the technology to other pathogens
FISH FARMERS	Preventive water treatments for the prevention of diseases
Producers	Cost effective preventive system
Policymakers & Regional governments	Reduction of medication use and pathogen load due to innovative water treatment
Consumers	Safer fish, healthy fish, sustainable fish
FAO	Cost effective technology for the prevention of pathogen dissemination in small scale farms
EDUCATIONAL COMMUNITY	Out-of-the-box approach to disease prevention
Biologist specialiced in farming	New tools for disease protection
Future water managers	Better use of limited resources
Veterinaries	New lines of work in biosecurity
Biotechnology students	New applications of nanno tools
TECHNOLOGY SUPPLIERS	Sinergies and complementary of technologies
Standardization institutions	Validation of new preventive treatments for disease control
Regulatory bodies	Alternative water and disease management beneficial to the health of fish, water and consumers
Investors	New disruptive technologies to be scaled

PathoGelTrap's dissemination and communication strategy will be structured in three phases along the project's lifetime:

- **PHASE 1 (M1 to M12): PRESENTATION OF PathoGelTrap PROJECT**. In this phase, we define a plan with a presentation to the media and the general communication channels of PathoGelTrap (project website, social networks, newsletter...) to try to reach the highest impact in raising awareness about the project and pave the way to effectively engage relevant stakeholders in project's activities.
- **PHASE 2 (M13-M24): START-UP AND ATTRACTION**. In this phase, we communicate the processes being carried out within PathoGelTrap by its partners to promote the participation of target researchers and industrial players, healthcare professionals, social groups, the general public interested in medicine and technology, and members of the educational community.
- **PHASE 3 (M25-M36): DISSEMINATION OF RESULTS** towards their sustainability and growth.

3. Dissemination

3.1. Objectives and strategy

The aim of public dissemination of PathoGelTrap will be to raise awareness about the project, but most importantly, to disseminate the project results to audiences that may take an interest in the potential use of the results. PathoGelTrap dissemination will focus on engaging with aquaculture industry, biothechnologists, health management community and producers to gather their views about the future of water treatment, as well as to raise their awareness of the potential benefits and new horizons opened by PathoGelTrap.

Although the consortium aims at establishing a transparent, two-way conversation with target communities, partners must bear in mind that the project focuses on a somehow sensitive matter (security issues related). Therefore, care must be taken when communicating with the public and media to avoid unnecessary misunderstandings about the nature of the project and incorrect perception of its activities, particularly among online communities (e.g., as embodied in discussion forums or comment threads on news websites).

Table 2: Dissemination objectives.

Dissemination Objectives
To promote the commercial exploitation of the project's results by contributing to the creation of impact and awarenesss by sharing the benefits of the results for fish farmers and technology providers as stakeholders.
To promote the widest dissemination of the project's knowledge with biotechnology research, water health and educational community as stakeholders to create impact and advance new high-impact solutions related to water health and animal welfare, and open the door for a disrupting way for future pathogenic disease control.
To promote the integration of the products of PGT in the Health Management Plans at local and regional levels

Dissemination will take place throughout the project’s lifespan and will be extended after the project ends. All materials and dissemination lines will be specifically designed to address the needs of the different target groups.

3.2. Dissemination tools

Different tools will be used throughout the project according to the targets we want to reach, the messages we wish to convey and the availability of results. Main tools to reach target audiences include the following:

Table 3: Dissemination tools.

Dissemination actions	Dissemination materials
Publication of opinion pieces and articles	Press releases in specialized and industry newspapers and magazines
Peer-reviewed articles	Journals in open access
Third-party events and conferences (presentations)	Oral or poster personal presentations of papers in events, promoted through social media, project website and individual partners websites.
Collaboration with other EU projects, platforms and associations	Exploring projects of interest.
Multimedia releases, posters and flyers	Issued for presence in events.
Emails	Contacts of interest, subscription through website.
E-Newsletters	specialized and industry newspapers and magazines.
Tradeshow	To be defined the choreography of the presentation.

This will be complemented with key communication mechanisms which are the project **website** and **social networks.**.

3.2.1. Opinion pieces and articles for newspapers and magazines

PathoGelTrap partners will write at least two opinion pieces or articles related to their research and the outcomes of the project to be published in industry magazines. By targeting different industrial sectors, policy-makers, innovators, and professional bodies, who are the most likely the main readers of such magazines, we aim to influence their research and innovation activities and raise their awareness about the potential from up taking PathoGelTrap's results and leaning from its outcomes. Also, to influence the guidelines and decision-making processes from regulatory bodies in terms of speed and position towards nanomedicine in particular and nanotechnology in general.

Examples of potential magazines we could target include Hatchery International, Fish Farming International, Fish Farmer Magazine, Infofish, Aquaculture Magazine, Eurofish Magazine, Open Access Government (https://www.openaccessgovernment.org/), etc. We will identify other good avenues for publication of opinion pieces and articles based on the need and audiences we wish to reach out to.

3.2.2. Peer reviewed articles

PathoGelTrap is committed to support the publication of at least four articles in peer reviewed journals, in Open Access. It will be part of their activities during the project, and be related to the research project each of them will work into during PathoGelTrap.

Examples of potential journals we could target include: PNAS, PloS Computational Biology, Plos Biology and specialized journals such as Nature Materials, Nature Biotechnology, Angewandte

Chemie, Biomaterials, JBC, Aquacultures, Fisheries, etc., etc. We will identify other good avenues for publication of opinion pieces and articles based on the need and audiences we wish to reach out to.

3.2.3. Third-party events and conferences (presentations)

PathoGelTrap partners will disseminate and build support for the consortium's results by presenting the project and its findings at selected public events and conferences and publishing them in conference proceedings, whenever possible.

The partners will primarily give these presentations personally either as oral or poster presentations of papers. Although not the main means for disseminating project results, it represents an excellent opportunity for getting immediate feedback from the research community thus providing two-way communication, and leveraging new collaborations and research-continuation projects.

Plans for event participation will be shared with the consortium and all the attended events must be recorded in the monitoring document available in the shared workspace. Participation in any type of public event (at local, national or international level) will be promoted on social media, on the project website and on the individual partner websites with news items.

3.2.4. Relevant project presentation within industry tradeshow

AQUAMASTERCLASS event + Virtual Reality + Life Presentation by Popular Figure

The event will feature a short screening in AquaMasterClass format by the project leaders and recommendations of the benefits of an internationally relevant stakeholder in the field of water, animal and consumer health.

The presentation will be a combination of a live event with virtual reality of the results and product operation.

Attendees will be able to touch the product and see its benefits live. Presentation of commercial products in their two formats (liquid and filter) showing how they block the pathogens directly into the water, surpassing the current technological paradigm that focuses on disease prevention through the direct action over the fish by vaccines or broad-spectrum antibiotics.

The event will be broadcast in streaming format and subsequently adapted in its entirety to AquaMasterClass format for dissemination and availability to the community through social networks and the online training platform.

The event will be possible through a reservation of space and stage scheduled at an international fair to be confirmed (Aquanor'23, Aquasur'23, others)

The event will be directed by an internationally renowned figure who will act as master of ceremonies.

This will allow us to make the product known to the fish farmers, R&D departments and governance representatives directly and we will be able to explain the benefits of the product as well as identify possible buyers of the final product.

The aim of this event is to make the presentation a unique event to disseminate and communicate a unique and disruptive product in the world of water health and animal welfare in aquaculture.

3.2.5. Collaboration with other EU projects, platforms and associations

PathoGelTrap will identify, connect and collaborate with other initiatives and EU-funded projects with similar topics and objectives, relevant platforms (e.g. in relation to the project's scientific areas as well as regulative issues) and associations (e.g. European and National Producers association) to support PathoGelTrap's impact. Examples of relevant projects are given in Annex 3.

Examples of envisaged collaboration activities are the participation of members of these initiatives in PathoGelTrap training events, promoting each other's events/key outcomes via news items on the project website and on social media, etc.

These activities are key for the development of synergies, improved knowledge sharing and information exchange with researchers and innovators.

3.2.6. Multimedia releases, posters and flyers

Multimedia materials will be prepared during PathoGelTrap, to be published mainly via PathoGelTrap website, and also at events in which Project Partners take part disseminating PathoGelTrap activities and results.

Flyers will be published at PathoGelTrap's website, as well as offered during dissemination and communication on-site activities.

3.2.7. Emails

Depending on the needs, the partners are invited to use all the tools at their disposal to contact the recipients of PathoGelTrap's actions, present the project and its objectives, distribute information material, convey news and promote participation in the events (always in line with directives in **D6.1 Data Management Plan**).

Through a direct approach, the partners will be able to create a network of contacts with the various players working at the intersection amongst chemistry, new therapies and nanotechnology at national and international level, in order to promote synergies and future collaborations.

Emails would be sent to civil society organizations (CSOs) and policy makers in order to provide information on the work being carried out in PathoGelTrap and gather their feedback, which could help influence the outcomes of the project.

Reaching out to experts via email will also be part of the communications work carried out.

3.2.8. E-Newsletters

PathoGelTrap Consortium will keep active in relevant newsletters around the project's scientific, technological and health areas. Furthermore, e-newsletters about the project's activities and results will be released at least every 6 months though the project's website, with all partners becoming active in spreading them around and, if needed, translating them to national languages.

Figure 3: PathoGelTrap newsletter on the project kick-off.

3.3. Barriers, risks and mitigation measures

One of the main risks relates to the inherent difficulties of developing and launching towards industry and society disruptive technologies in the chemical, pharmacological and health areas. For this reason, dissemination will be active in every step of the project, using a variety of means. Furthermore, the project includes partners who are recognised experts in their respective domains who will benefit from the project and carry forward its experience in their domains. This will boost the visibility and awareness of the project's results. Moreover, the consortium has good links with other experts, networks and projects dealing with technology innovation, environmental management, innovativep production methods, circular economyand biotechnology.

Specific risks in relation to dissemination activities and the proposed mitigation measures are described in the following table.

Table 4: Dissemination risks and mitigations.

Risk relating to dissemination	Level (1-5)	Mitigation
Not Gaining recognition, acceptance and support from industry and fish healthcare professionals around project's results.	5	The dissemination of the project will be carried out with the content of maximum value for the industry and fish health professionals.
Not Gaining participation in the training events planned.	3	Have previous confirmations from stakeholders in order to reinforce the dissemination of the training events.
Risk that diversity in networks, languages and expertise, regions and countries make messages coming out of PathoGelTrap irrelevant to national and regional and/or international audiences.	5	Three coexisting lines of communication: Technical, Local – Regional and Divulgative.
Risk that public deliverable reports impede scientific publication or patenting as results are already published in the public domain.	5	There is a protocol in place within the Project Management structure, to control. Relevant advise on patent development is a hand to address any issue.

4. Communication

4.1. Objectives and strategy

This section outlines the adopted strategy for communicating and raising awareness about the project, including objectives, the actions to be taken, their timing, the target groups to reach, and the means and channels to reach them. All partners are jointly responsible for promoting the project.

While our dissemination strategy aims to reach audiences that may take an interest in the potential use of the results (e.g. scientific community, industry, policymakers), our communication plan focuses on reaching out to society and showing the impact and potential benefits of PathoGelTrap on society[3].

PathoGelTrap will promote engagement with relevant experts, including the public and the media, and sharing of experiences by communications activities targeted and adapted to various audiences. Communication in the PathoGelTrap project will be greatly boosted by the fact that it focuses on a

[3] https://www.iprhelpdesk.eu/sites/default/files/EU-IPR-Brochure-Boosting-Impact-C-D-E.pdf

high-profile topic (Water Health and Food Security) that is currently widely covered by the media, academic and scientific discourses.

Table 5: Communication objectives

Communication Objectives
6 Participations in international sectorial events.
6 Sectorial publications.
485 Twitter Posts.
127 Facebook Posts
145 Linkedin Posts.
9 Newsletters.

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All the PathoGelTrap communication activities that will occur over the lifetime of the project will serve to promote the project and its results to a multitude of audiences. These cover a set of dedicated actions aimed at engaging relevant experts, including the media and public, with regard to the project, its key findings and results and, when possible, stimulating feedback from the experts. The diverse range of audiences for PathoGelTrap communications means we need to acknowledge that most of our audiences lack expertise in some of the areas covered by the project. For this reason, tactics for communicating complex messages to non-expert audiences need to be put in place. This includes ensuring external communications are interesting and inclusive to all audiences and that content is readable and adapted to the audience. Moreover, consistent messaging and a clear project identity will help ensure PathoGelTrap is identifiable and recognisable as an entity.

4.2. Communication tools and channels

The partners will use a variety of instruments for communication purposes:

- **Project website**
- **Social media** (Twitter, LinkedIn, Facebook ,YouTube) (we target 1401 followers)
- **Newspaper** articles (e.g., ScienceDaily, Discover Magazine with >8.9 million total brand impressions) (at least during project lifetime)

We will review these instruments at regular intervals for efficacy.

4.2.1. Website

The PathoGelTrap website is managed by SmartWater, with partners to be active in the provision of updated contents. It serves as the main point of contact for the project, with a structure that allows the consortium to tailor communications for different target audiences as the project progresses.

The PathoGelTrap website is fully integrated into all major social media platforms allowing for quick dissemination of information once a case study or article has been published. Not only does this create a cohesive appearance on all platforms, it serves as a form of advertising for people who may not be familiar with the project.

When you access the website, the "Home" appears, which is divided into 4 parts.

- **Main banner** with a small description of the technology, a CTA to know more about the project and the presentation of the project.

- **Access to the blog** with the kik-off and relevant information.
- **Social media section** with direct access to Tweeter and Facebook. In this section, the latest publications from social networks appear in real time.
- **Partners of the project**. Most disruptive technologies emerge from interdisciplinary collaboration. This project gathers reputed experts from the following disciplines: Mathematics and computer Science (computational biology-IFPAN, risk assessment modelling-UCD, intelligent monitoring systems-SW), Biotechnology (protein engineering, biochemistry, biophysics-CSIC), Animal Health Science (fish health and welfare-IZSVE) and Social Science (Economic, Social and environmental life cycle assessment-VERT). The research proposed is not just a step forward of existing developments in Health Management. Indeed, we aim to develop PathoGelTrap as a breakthrough technology for aquaculture pathogen control that has the potential to emerge and displace the existing technology for health management. This project will also open completely new R&D lines for the Partners:

    - **CSIC**, is an expert in protein engineering and nanomechanics of proteins. CSIC has experience in working with LCR-containing proteins23 and amyloids, both pathological13 and functional14, including the human CPEB that forms liquid droplet24. In this project, CSIC will: i) screen and select liquid-droplet forming LCRs, ii) screen affibodies for pathogen targeting, iii) develop the LCR-AFB chimera and iv) deliver and test in vitro the PathoGelTrap technology.

    - **IFPAN** has ample experience in molecular dynamics simulations (both atomistic and coarse-grained) of fluids, proteins and multi-protein complexes, including virus capsids. Here, IFPAN will provide in silico models for the LCR and the AFB behavior, both alone and in the LCR-AFB chimera to guide the CSIC experiments in choosing appropriate LCRs and AFBs as well as for the interaction of the pathogens with the LCR-AFB chimera.

    - **IZSVE** conducts prevention, control and research activities in three main areas: animal health and welfare, food safety, and environmental protection. Here, they will i) provide pathogens (virus and bacteria), i) test affibodies alone and assembled affibodies-protein efficacy against selected pathogens, iii) perform the welfare assessment of the fish in different conditions and iv) test in vivo the PathoGelTrap technology.

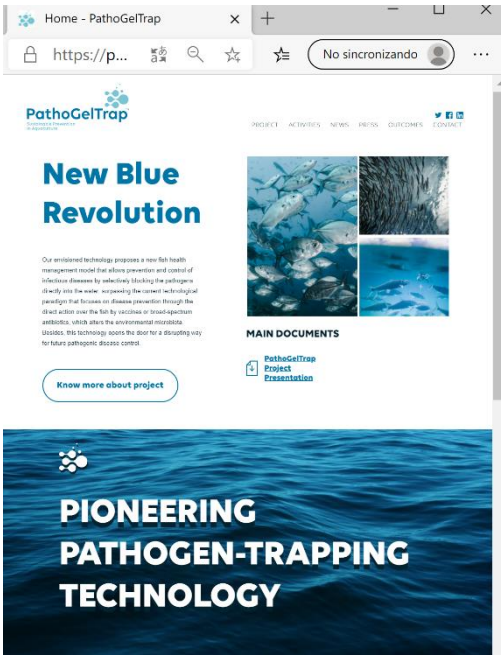
    - **UCD** has specific expertise in risk assessment with particular focus on implications for human health and environmental contamination. Here they will use this expertise to evaluate environmental and potential human health risks from the deployment of the LCR-AFB chimera.

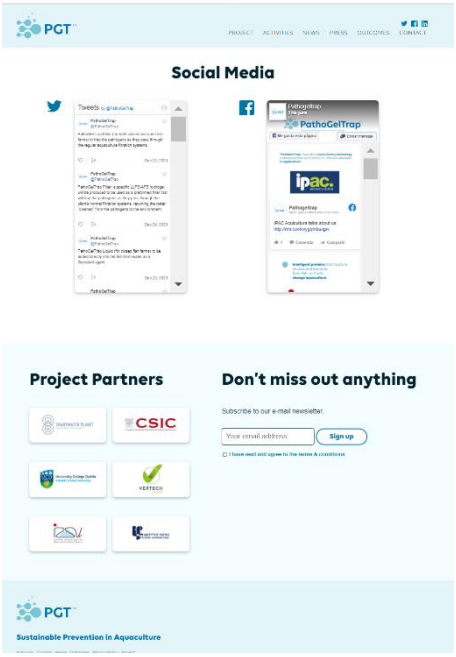
    - **VER** is a French research-intensive SME specialized in sustainability assessments of novel technologies and innovative materials considering the three pillars of sustainability (environmental, economic and social aspects). Here, it will develop the economic and social and environmental assessment of PathogelTrap.

    - **SmartWater** is a high-tech SME specialized in the development of AI-based managing system for fish farms. With their sensors and performance systems they will support the tests and the assessment of the environmental impact of PathoGelTrap over water quality, by providing with precision up to 85 parameters related to water quality.

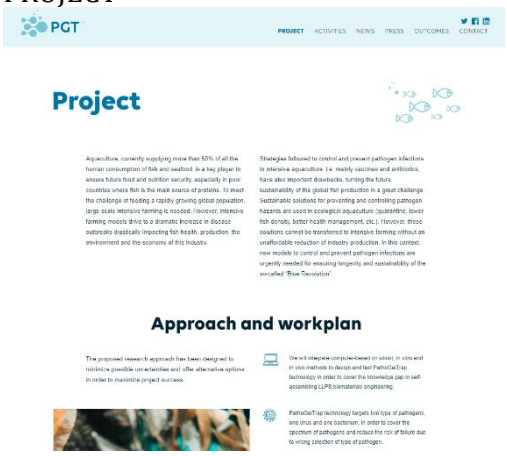
The website is currently online: https://www.PathoGelTrap.eu/

HOME

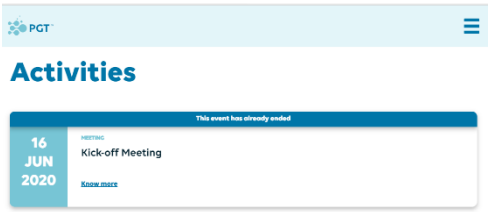




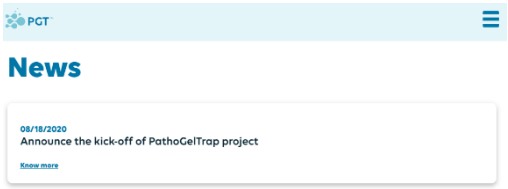
PROJECT



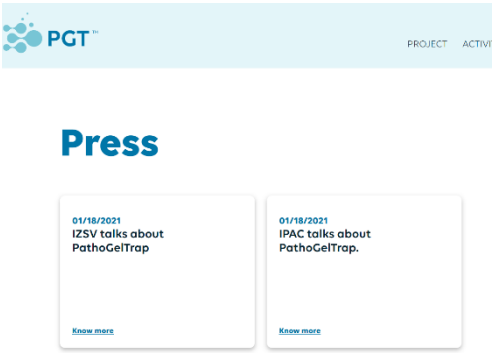
ACTIVITIES



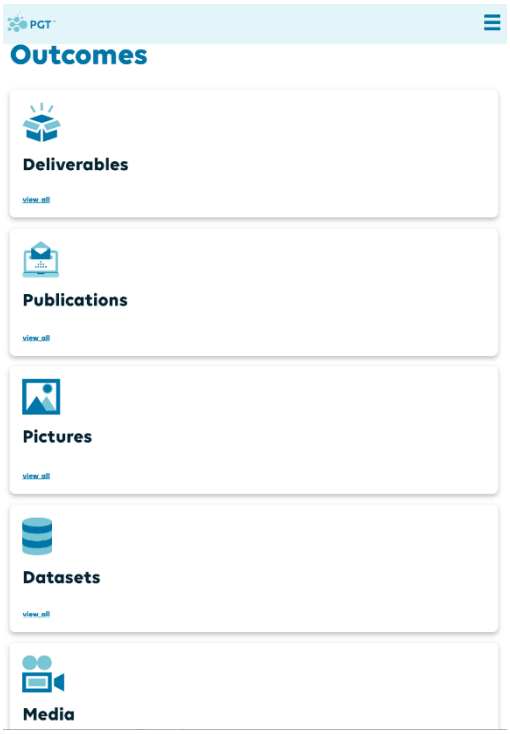
NEWS



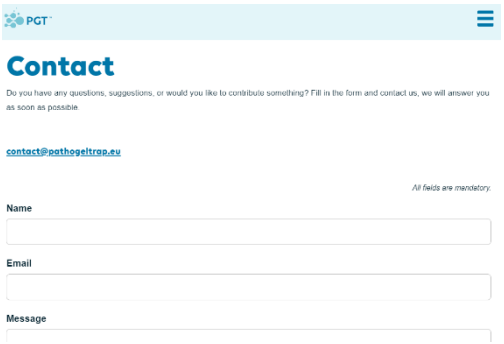
PRESS



OUTCOMES



CONTACT



4.2.2. Social media accounts

Publication of new information on the PathoGelTrap website automatically syndicates all social media platforms so that tweets and posts are created with the latest article information. This does not happen for videos, which are hosted on YouTube and added to the website once available.

Many of the topics covered by PathoGelTrap are already discussed on social media platforms. To ensure PathoGelTrap is part of this discussion and help extend the reach of PathoGelTrap communications, we will use a combination of official PathoGelTrap social media channels and channels owned by partners and experts in the project.

4.2.2.1. LinkedIn

LinkedIn will be very useful to keep active in specific groups dedicated to PathoGelTrap's focus and activities, which aggregate relevant targets in terms of dissemination and communication (e.g. researchers and industry within PathoGelTrap scientific areas). A dedicated page has been set up, and it is managed by SmartWater. The account for PathoGelTrap has been set up in August 2020. Linkedin is a formal social network so the publications to be shared will be of this nature. (link).

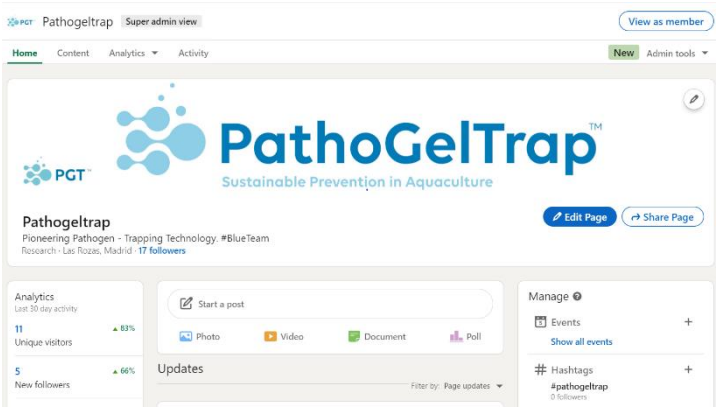


Figure 4: Screenshot of PathoGelTrap LinkedIn account

4.2.2.1. Twitter

A Twitter account (link) for PathoGelTrap has been set up in August 2020 to post news about the project as soon as possible because of the widespread use of Twitter by policy makers, European projects, researchers, influencers and other experts. At present it is managed by SmartWater.

Twitter is today the most used network for H2020 projects, particularly around events.

Figure 5: Screenshot of PathoGelTrap Twitter account

4.2.2.2. Facebook

Facebook account (link) will be very useful to keep active in specific groups dedicated to PathoGelTrap's focus and activities, which aggregate relevant targets in terms of dissemination and communication (e.g. researchers and industry within PathoGelTrap scientific areas). A dedicated page has been set up, and it is managed by SmartWater.

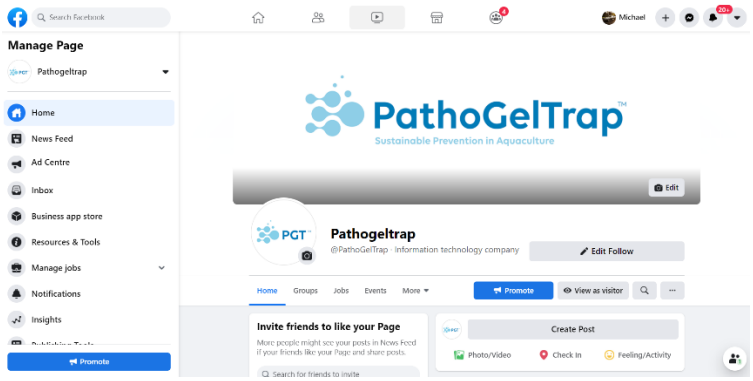


Figure 6: Screenshot of PathoGelTrap Facebook account

4.2.2.2. Other

As project advances, further social networks will be explored: Facebook, Linkedin and Twitter (even, potentially, TED Talks).

4.2.3. Social media accounts strategy

In the initial stages, the institutional accounts of PathoGelTrap partners and consortium members active on Twitter, Facebook and Linkedin are essential to create a follow up. The @PATHOGELTRAP account follows partners and individuals. Consortium members are asked to follow us and help share information with their networks by re-sharing account content.

In the initial phases, content related to the project launch on the partners' websites and other media will be shared on a regular basis to showcase the international and multi-disciplinary nature of the project. Project videos and website content will also be shared, followed by public products and project publications.

With the arrival of the publications and products of the PathoGelTrap project, we will again share partners' publications that are relevant to PathoGelTrap, as well as all activities related to the participation or organisation of events.

Twitter, Linkedin and Facebook will also be used to direct traffic to the content of the PathoGelTrap website.
The project partners are expected to help disseminate PathoGelTrap and its results through their social accounts. When publishing on Twitter, Linkedin or Facebook, it is recommended to use relevant hashtags (e.g. #PathoGelTrap, #BlueFuture) to give more visibility to the publications. When posting, use a link with a shortened URL if there is a need to point to specific pages on the website, taking into account the limited number of characters. In addition, we recommend the use of images to create more attractive content for tweets. Only images that are freely reusable (under the Creative Commons License) should be used, except, of course, when using images taken during project events or images from PathoGelTrap.

Each one of the social networks has particular characteristics around the main strategy.

4.3. Barriers, risks and mitigation measures

Although our communication activities target different audiences (e.g. the public, the media) compared to dissemination, the main risks are the same (e.g., low interest in the project, failure to communicate the complexity of the topics addressed by PathoGelTrap and thus failing to reach a wider audience).

However, other communication risks will require a different course of action and different mitigation measures. The table below illustrates the specific risks we have identified for PathoGelTrap communications.

Table 6: Communication risks and mitigations.

Risk relating to communications	Level (1-5)	Mitigation
Failure to drive and attract traffic to the PathoGelTrap website.	3	A study will be carried out to determine the causes of the low web traffic and the necessary actions will be implemented.
Risk that PathoGelTrap communications become too academic to be understood by the public.	3	A vocabulary that is easier to understand will be used.
Risk that lack of competence (e.g. journalistic experience) within the communications team impedes PathoGelTrap communications.	5	The PathoGelTrap communication team will be in continuous training and learning so that the communication of the project is carried out in the most effective way.
Risk that diversity in networks, languages and expertise, regions and countries make messages coming out of PathoGelTrap irrelevant to national and regional and/or international audiences.	5	Two coexisting lines of communication: Local – Regional and Divulgative.
Difficulties in attracting audience to the events foreseen.	3	Have previous confirmations from attendees in order to reinforce the dissemination of the training events.
COVID-19 impact in our plans for communication events.	3	Virtual attendance will be explored.

4.4. Communication guidelines

4.4.1. Visual identity

The visual identity of the project is to ensure that the project deliverables and working documents are presented in a way which befit the branding of the project. It has been selected amongst all partners through voting from 3 different possibilities.

All partners must follow a consistent style, with all documents used for submission or put on the server including the grant agreement number, EU logo and project logo.

The PathoGelTrap logo is as follows:

Figure 7: PathoGelTrap imagotipe.

Figure 8: PathoGelTrap reduced imagotipe.

Presentations must be made using this logo with the grant agreement number and EU logo.

Additionally, all partners should use and follow these guidelines in all communication activities related to the project. All documents used for submission or put on the server should include the grant agreement number, EU logo and project logo.

Reference document for EU logo: https://ec.europa.eu/inea/en/connecting-europe-facility/cef-energy/beneficiaries-info-point/publicity-guidelines-logos

4.5. Roles and responsibility

SmartWater is the partner responsible for the coordination and implementation of the dissemination and communication activities; however, all the other partners will be actively involved in the individual actions and will be responsible for the proper promotion of the project. They will also provide all the information on the progress of the communication activities, allowing continuous monitoring of their implementation and the achievement of pre-established objectives.

Partners will be responsible for the translation of materials from English into their country's principal language, e.g. press releases and flyer. Each partner will make available a partner representative responsible for developing and implementing the project's communications plan.

5. Overall monitoring and evaluating the effectiveness of PathoGelTrap DCP activities

An important aspect of the DCP activities concerns the evaluation of the effectiveness of PathoGelTrap activities and the achieved impact. The DCP is a living document and partners will evaluate their plan at the interim review and again before the end of the project. However, all consortium partners are encouraged to keep track of each communication/dissemination activity (and the audience reached whenever possible) as they take place, as well as in relation to exploitation. It is important to keep track also of the feedback gathered from the target audience (if applicable) for further dissemination or exploitation purposes. Strict compliance with GDPR is essential, and is a responsibility of all partners.

The main means of communication will be the web and social networks. These digital media will mainly be quantified with external tools but some media such as social networks include options to measure the results of communication activities.

The main tool that will be used to measure the results of the website is **Google Analytics**. Analytics is a very complete web analysis tool that provides us with relevant information: number of visitors and visits to the website, average duration of the visit, average number of pages viewed by each user, geographical and socio-demographic reports (language, Internet provider, location, mobile device...), etc. But it also provides us with information about many other variables.

To measure the results of Google Analytics, in September 2020 the website was linked to the PathoGelTrap Google Analytics account.

The tool called "**Metricool**" will be used to measure the results of the social networks. Metricool is a tool for managing social networks and online advertising. It allows you to generate detailed reports of all accounts associated with PathoGelTrap (Linkedin, Tweeter and Facebook).

5.1. Dissemination and Communication roadmaps per main target group

Based on the types of target audiences defined in Section 2, specific roadmaps or 'chains of dissemination & communication actions' will be established. In the roadmaps below, the actions are detailed according to the dissemination and communication phases (also described in Section 2).

Specific actions will be adapted according to the development of the international situation (COVID).

5.1.1 ROADMAP #1: Researchers and Educational Community

The following actions will be chained along PathoGelTrap's dissemination phases (P):

Table 7: Communication objectives KPIs for Researchers and Educational Community.

Dissemination Objectives	Mo. 1-12	Mo. 13-24	Mo. 25-36
10 Participations in international scientific congresses. (*)	(*)	5	5
Organize the 1st European Workshop on Engineered proteins for Health and Water.			1
18 Scientific publications.		5	13
9 Hight – impact scientific publications.		2	7
4 PhDs during the project lifetime.			4
4 Intellectual Property registrations.			4
1 R&D group devoted to the area.	1		
1 proposal to grow cooperative research.			1
1 Industrial Thesis.		1	
Creation of Stakeholders Network (database of contacts) to be used as the basis for dissemination and communication.	1		
One to one meetings to raise awareness of PathoGelTrap			To be defined

(*) Participations in international scientific congresses has been postponed or will be attended on-line

5.1.2 ROADMAP #2: Fish Farm Operators and Technology Suppliers.

The following actions will be chained along PathoGelTrap's dissemination phases (P):

Table 8: Communication objectives KPIs for Fish Farm Operators and Technology Suppliers.

Communication Objectives	Mo. 1-12	Mo. 13-24	Mo. 25-36
6 Participations in international sectorial events.	2	2	2
6 Sectorial publications.	2	2	2
485 Twitter Posts.	150	170	165
145 Linkedin Posts	48	50	47
127 Facebook Posts	40	47	41
9 Newsletters	3	3	3

5.2 Key Performance Indicators (KPI)

The table below illustrates a list of key performance indicators for the different activities and channels used in the dissemination and communication activities.

Table 9: DCP KPI for PathoGelTrap.

Activity	KPI	Expected target M1-M12	Expected target M13-M24	Expected target M25-M36	Overall target
Communication and dissemination activities					
Media coverage	*Press releases / E-newsletters*	3	3	3	9
	Articles in industrial and general media	3	3	3	9
Social media	**-Twitter**: *Genuine Followers* *Tweets* *Likes*	 *120* *150* 30	 *350* *170* 45	 *350* *165* 42	 *820* *485* 117
	-LinkedIn*:* *Connections 1st* *Posts* *Likes*	 *60* *48*	 *70* *50*	 *71* *47*	 *201* *145*
	Facebook: Followers: Posts: *Likes*	 130 40 *60*	 390 45 *70*	 390 42 *60*	 910 127 *190*
Website	*views* *visitors*	*400* 260	*500* 280	*510* 300	*1410* 840
Event-related	**Third party events and conferences -** *Number*	2	2	2	6
	-Public-awareness event "How to use PathoGelTrap" *Number* *Participants*			 2 600	 2 600
Education-related	**Courses** **Attendees**		*2* 200	*2* 200	*4* 400

Activity	KPI	Expected target M1-M12	Expected target M13-M24	Expected target M25-M36	Overall target
Peer-reviewed scientific publication	*Articles in renowned journals, conference proceedings, books, monographs & reports*		7	20	27
Communication material uses	*Project leaflets* *Project poster* *Project presentation*		10 10 5	10 10 5	20 20 10

6. Conclusion

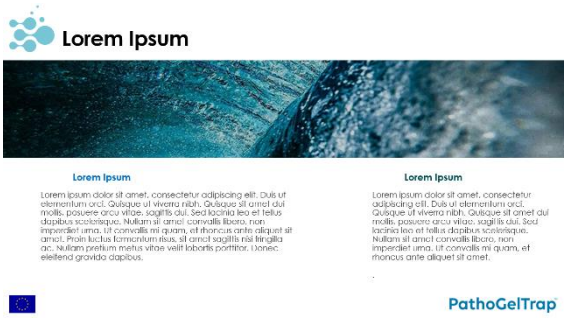
The DCP defines and records the strategy, tools and materials that are to be used in PathoGelTrap communication & dissemination activities throughout the project lifespan. This document also provides the consortium partners with guidelines on how to disseminate the results of the projects and the knowledge gathered during the process. The DCP is a living document and the candidate dissemination actions will be continuously monitored and accordingly updated to reach the defined objectives and audiences.

APPENDIX 1: Project general presentation

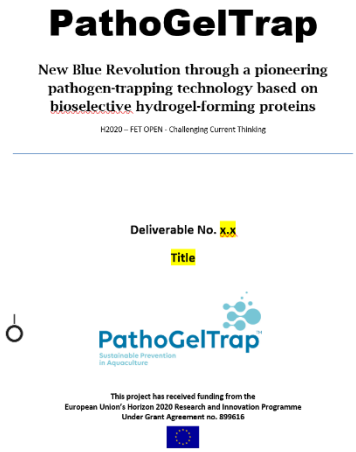
A template has been created to keep branding consistency across partners and activities. This template will be customisable but will help to keep the visual identity of the project streamlined.

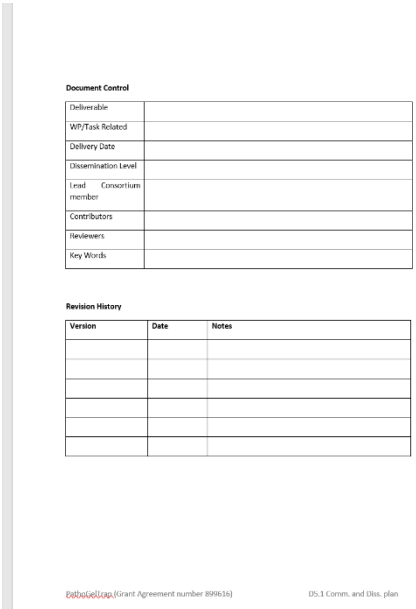
Screenshots:

Presentations



Deliverables





APPENDIX 2: List of networks, platforms and associations

NAME / WEBSITE	DESCRIPTION
Sociedad Española de Biotecnología (SEBiot) https://sebiot.org/	The Spanish Society of Biotechnology aims to promote in Spain the development of Biotechnology in all its branches and activities. Biotechnology is understood as the application of scientific and technical principles to the processing of materials by biological agents in order to provide goods and services.
Sociedad Española de Microbiología https://www.semicrobiologia.org/	The Spanish Society of Microbiology (SEM) is a scientific society founded in Madrid in 1946. The main objectives of the SEM are: to promote basic and applied microbiology, to cultivate international relations, to bring together the different professionals working in this science, and to contribute to the dissemination of science in general, and microbiology in particular, among the general public.
Fundación Ramón Areces https://www.fundacionareces.es/	The Ramón Areces Foundation is a private cultural foundation created by Ramón Areces with the social purpose of developing education, culture and research. The Ramón Areces Foundation promotes basic research in those scientific disciplines in the development phase that require significant financial resources and equipment, as well as clinical or applied research projects, whose results are aimed at improving the quality of life of people"
European biotechnology network https://european-biotechnology.net	The primary goal of the European Biotechnology Network is to improve cooperation in the fields of biotechnology and the other life sciences, primarily between the 28 member states of the European Union, Switzerland and Norway. Biotech professionals from science and research, industry, academia, organisations or state agencies and authorities are invited to become involved in the network and make use of the services it provides.
Protein society https://www.proteinsociety.org/	The Protein Society (TPS) is a not-for-profit scholarly society. Since 1985, TPS has served as the intellectual home of investigators across all disciplines - and from around the world - involved in the study of protein structure, function, and design. TPS provides forums for scientific

	collaboration and communication and supports professional growth of young investigators through workshops, networking opportunities, and by encouraging junior researchers to participate fully in the Annual Symposium.
API (Italian Aquaculture Producers Association) http://www.api-online.it/index.cfm/it/	API, which is a non-profit organisation, aims to protect, develop and consolidate all fish farming activities in inland, marine and brackish waters. Therefore, it promotes all economic, scientific, technical, insurance, professional, trade union and legal interventions that are necessary to achieve this goal. Assistance in the economic field aims to meet the needs of farmers on the possibilities of optimising their resources, and possible opportunities for public funding. API's interest in the scientific field takes the form of collaboration with the various scientific institutions in order to enrich the knowledge to be made available to the companies, both with regard to technological innovations and any veterinary assistance to be provided to members.
EAFP (European Association Fish Pathologists) https://eafp.org/	The EAFP is an interdisciplinary society, embracing all aspects of aquatic disease in fish and shellfish, in aquaculture and in wild stocks.
The European Union Reference Laboratory (EURL) for Fish and Crustacean Diseases https://www.eurl-fish-crustacean.eu/	The European Union Reference Laboratory (EURL) for Fish and Crustacean Diseases is funded by the European Commission and is situated within the Unit for Fish and Shellfish Diseases at DTU Aqua – National Institute of Aquatic Resources at the Technical University of Denmark. The functions and duties of the EURL are concerned with harmonizing diagnostic procedures for notifiable fish and crustacean diseases in Europe.
Open Access Government https://www.openaccessgovernment.org/	Open Access Government is a digital publication that provides an in-depth perspective on key public policy areas from all around the world, including health and social care, research and innovation, technology, blockchain innovation, government, environment and energy.
EIT FOOD EUROPE https://www.eitfood.eu/	EIT Food is Europe's leading food innovation initiative, working to make the food system more sustainable, healthy and trusted
World Aquaculture Society (WAS) https://www.was.org/	The World Aquaculture Society (WAS) is strategically positioned to play an important role in assuring the progressive development of aquaculture worldwide by meeting the increased global demand for science-based information and technology. In order to meet the challenges of the

	future, WAS has a long-term vision and mission priorities with a renewed "Commitment to Excellence."
Aquaculture Association of Canada http://aquacultureassociation.ca/	The Aquaculture Association of Canada (AAC) is a registered charity with a mandate to transfer information between the various sectors of the aquaculture community. It does this by organizing workshops and conferences on topical issues, publishing the proceedings of these events, and supporting students through scholarships, travel bursaries, and best-paper awards.
Canadian Aquaculture Industry Alliance https://www.aquaculture.ca/	Canadian Aquaculture Industry Alliance (CAIA) is the national association that speaks for Canada's seafood farmers, representing their interests in Ottawa to regulators, policy makers and political leaders. With a membership that reaches coast to coast to coast, comprised of finfish, shellfish and aquatic plant farmers, feed companies and suppliers, as well as regional aquaculture associations, CAIA is a passionate advocate for the quality and sustainability of farmed seafood.
National Aquaculture Association (NAA) http://thenaa.net/	NAA mission and objetives are to provide a unified national voice for US aquaculture that ensures its sustainability, protects its profitability, and encourages its development in an environmentally responsible manner
US Aquaculture Society https://www.usaquaculture.org/	The United States Aquaculture Society (USAS) is a chapter of the World Aquaculture Society (WAS). WAS is a worldwide professional organization dedicated to the exchange of information and networking among the diverse constituencies interested in advancing the aquaculture industry. As WAS becomes more globally involved in providing services and professional development opportunities, the role of USAS is increasingly important for the U.S. aquaculture community.
Aquaculture & Fishing Farming Associations http://www.sea-ex.com/aquaculture/aqua-associations-usa.htm	Aquaculture & Fishing Farming Directory - Aquaculture Associations - USA
Asociación venezolana productores de Tilapia https://mundoagropecuario.com/asociacion-venezolana-de-productores-de-tilapias/	asociación sin fines de lucro, cuyo objeto es fomentar el desarrollo del cultivo comercial, procesamiento y comercialización a escala nacional e internacional de tilapias en armonía con los intereses nacionales, procurando la asociatividad, el mejoramiento científico-tecnológico, económico y ético de sus miembros.

ASPROPISAT https://productosdeldesarrolloalternativo.wordpress.com/directorio-de-asociaciones/asociaciones-de-cordoba/aspropisat/	Non-profit association, whose purpose is to promote the development of commercial farming, processing and commercialisation of tilapia at national and international level in harmony with national interests, seeking the associativity, scientific-technological, economic and ethical improvement of its members.
FEDEACUA (Federación Colombiana de Acuicultores) https://fedeacua.org/	FEDEACUA is a national trade organisation that represents producers of seed, fattening, chain of custody, processing plant and commercialisation of continental fish farming in Colombia.
CNA (Cámara Nacional de Acuacultura) https://www.cna-ecuador.com/nosotros/	The CNA is a non-profit organisation dedicated to promoting the sustainable development of the Ecuadorian aquaculture sector through quality services that promote competitiveness within a framework of deep respect for social and environmental standards, thus contributing to the welfare of the community.
Salmón Chile https://www.salmonchile.cl/	For 35 years, we have been working to unite the main producers and suppliers of Atlantic Salmon, Coho and Trout, in the health, environmental, regulatory, social and economic challenges of the sector, both nationally and internationally, placing sustainability and links with communities as the fundamental drivers of our work. We are present in the regions of La Araucanía, Los Lagos, Chiloé and Aysén.
Sociedad Nacional de Acuicultura SNA https://www.sna-peru.com/	We are a private business association that involves the entire value chain dedicated to Peruvian aquaculture. Our members are framed in their business work with social and environmental responsibility, seeking the strengthening and sustainable growth of Peruvian aquaculture, thus contributing to the development of the country, with food security and inclusive formal employment.
Aquaculture Association of Southern Africahttps://www.aasa-aqua.co.za/	The Aquaculture Association of Southern Africa (AASA) was established in the late 1980's in order to represent the interest of the then fledgling aquaculture industry in Southern Africa. The Association has since developed into a structure with representation from the various sectors contributing towards the aquaculture industry of the region, including marine species such as oysters, mussels, abalone and prawns; freshwater species such as trout, catfish, tilapia, ornamental fishes; as well as service providers such as feed

	companies, equipment suppliers and veterinary services. The objectives of the Association is to contribute towards the development of aquaculture in Southern Africa through effective representation and dissemination of information.
FEAP (Federation Of European Aquaculture Producers) http://feap.info/	It is the united voice of the European aquaculture production industry, being the Federation of National aquaculture associations in Europe that represent professional fish farming. FEAP supports and promotes the responsible development of aquaculture and provides the common positions and opinions of the European aquaculture sector.
Association of Aqualturists http://www.aoaindia.org/	The aims and objectives of the Association are: To advance the education of the public in the science of Aquaculture. To advance the science of Fish & Fisheries. To promote research into the science of Fish Farming and Aquaculture. To disseminate the useful results to the public through publications and organising seminars, workshops etc. To help towards advancement, dissemination and application of the knowledge of Aquaculture science To encourage and promote research in Aquaculture and related disciplines.
APROMAR (Asociación de Produtores Acuicultura Marina España) http://apromar.es	APROMAR is the Spanish Aquaculture Business Association. We are a professional, voluntary, non-profit, national organisation.
Coastal Aquaculture Authority (CAA) http://caa.gov.in/	To provide for the establishment of a Coastal Aquaculture Authority for regulating the activities connected with coastal aquaculture in the coastal areas and for matters connected therewith or incidental thereto.
Indian Aquaculture Society https://www.facebook.com/Indianaquaculturesociety/	Acts as a supporting community with different Central and State Government establishments engaged in marine products and allied activities.
Environmental Sciences Association of Ireland (ESAI) https://www.esaiweb.org/	An association of individuals working in or with an interest in the environmental area in Ireland.
The Chartered Institute of Ecology and Environmental Management https://cieem.net/	We are the leading professional membership body representing and supporting ecologists and environmental managers in the UK, Ireland and abroad. Our Vision is of a healthy natural

	environment for the benefit of current and future generations.
Environmental Protection Agency, Ireland https://www.epa.ie/	The Environmental Protection Agency is at the front line of environmental protection and policing. We ensure that Ireland's environment is protected, and we monitor changes in environmental trends to detect early warning signs of neglect or deterioration.
The European Multidisciplinary Society for Modelling and Simulation Technology (FOODSIM) https://www.eurosis.org/cms/index.php	The aim of EUROSIS is to be the primary mover and initiator for and of European simulation and modelling projects, which bridge the gap between academic and industry based simulation and modelling research in Europe. This, by using the power of communication, dissemination of information and member-sourcing.
European Physical Society, Division of Physics in Life Sciences https://www.eps.org/group/DPL	DPL is the Division of European Physical Society which intends boosting the influence and role of physics in the study of all kinds of biological problems at any possible level (research, education, dissemination and policies). The Society´s goal for new coming years shall be moving from the standard way biology and physics are seen to cooperate, that is, answering biological questions using physics as a tool box (including concepts, theories, techniques and methods) to a new paradigm of solving outstanding physical questions using biological systems as suitable models, tools and inspiration. (Marek Cieplak, Board member)
American Physical Society, Division of Biological Physics https://engage.aps.org/dbio/home	The Division of Biological Physics, established in 1973, is composed of individuals who are interested in the study of biological phenomena using physical approaches and in investigations into the physical principles and mechanisms by which living organisms survive, adapt, and grow. The rich phenomena of life gives biological physics a very broad scope, from answering fundamental questions about life to advancing the biomedical sciences by developing new drugs and diagnostics equipment. Members of DBIO are affiliated with a broad range of departments, including Physics, Biophysics, Biochemistry, Mathematics as well as Schools of Medicine, federal research centers, and the biomedical industry. (Marek Cieplak, Fellow member)

APPENDIX 3: List of projects

(To be kept updated)

Acronym	Title	Teaser	Start date	End date
MEDAID	Medaid Mediterranean Aquaculture Integrated Development	The goal of MedAID is to increase the overall competitiveness and sustainability of the Mediterranean marine fish-farming sector, throughout the whole value chain.	May 2017	Oct 2021
PERFORMFISH	PerformFISH Consumer driven Production: Integrating Innovative Approaches for Competitive and Sustainable Performance across the Mediterranean Aquaculture Value Chain:	The overarching objective of PerformFISH is to increase the competitiveness of Mediterranean aquaculture by overcoming biological, technical and operational issues with innovative, cost-effective, integrated solutions, while addressing social and environmental responsibility and contributing to “Blue	May 2017	April 2022
SafeWaterAfrica	SafeWaterAfrica Self-Sustaining Cleaning Technology for Safe Water Supply and Management in Rural African Areas	SafeWaterAfrica Self-Sustaining Cleaning Technology for Safe Water Supply and Management in Rural African Areas The SafeWaterAfrica project will research and develop an autonomous and decentralized water treatment system for rural and peri-urban areas which is highly efficient in the degradation of harmful pollutants and at the same time very effective in killing microbiological contaminants. The system will be designed to provide 300 people in rural areas.		
PROJECTWATERSPOUTT	PROJECTWATERSPOUTT Water - Sustainable Point-Of-Use Treatment Technologies	WATERSPOUTT will design, develop, pilot and field-test a range of, sustainable point-of-use solar disinfection (SODIS) technologies that will provide affordable access to safe water to remote and vulnerable communities in Africa and elsewhere.	June 2016	May 2020
AQUAEXCEL3.0	AQUAculture infrastructures for EXCELlence in EUropean fish research 3.0	By integrating 40 top class European aquaculture research facilities, AQUAEXCEL3.0 provides a world-class platform for aquaculture research, from biology to technology, in all types of rearing systems, covering all major EU farmed species as well as the most promising new species. By integrating 40 top class European aquaculture	Nov 2020	Oct 2025

		research facilities, AQUAEXCEL3.0 provides a world-class platform for aquaculture research, from biology to technology, in all types of rearing systems, covering all major EU farmed species as well as the most promising new species. Overall, AQUAEXCEL3.0 will provide the Aquaculture Research community and Industry with new services focused on the user needs, to promote both excellent science and innovation.		
ELOXIRAS	Electrochemical Oxidation in the Recirculating Aquaculture Systems Industry	Recirculating aquaculture systems (RAS) operate by filtering and removing water pollutants from the fish tanks so it can be reused. Since its introduction.	Dec 2015	Nov 2018
EURASTIP	Promoting Multi-Stakeholder Contributions to International Cooperation on Sustainable Solutions for Aquaculture Development in South-East Asia	EURASTIP will evaluate and prepare for the launch of an international multi-stakeholder platform (MSP), so as to provide a new mechanism to create and reinforce international cooperation on sustainable aquaculture between Europe and South-East Asia and will focus on actions that will provide mutual benefit to both regions. EURASTIP, headed by the European Aquaculture Technology and Innovation Platform (EATiP) will create and support 3 National Pilot multi-stakeholder Platforms (NPPs) in major aquaculture producing countries (Thailand, Vietnam and Bangladesh) and develop road-map models for others in the region, providing the foundation for an international MSP. It will create, develop and reinforce the networking needed for the promotion of B2B partnerships, using European and SE Asian networks, realising international brokerage events and promoting cooperation.	Jan 2017	Dec 2019
ECOFISH	Researches on the potential conversion of conventional fish farms into organic by establishing a model and good practice guide	The conversion of conventional aquaculture farms in sustainable aquaculture farms help aquaculture businesses to achieve economic viability and competitiveness. Sustainable aquaculture is undoubtedly the management technique that has most contributed to support aquaculture businesses to adopt aqua-environmental measures for protection of the environment, natural resources and landscape.	June 2015	May 2019

APPENDIX 4: List of scientific and technological events

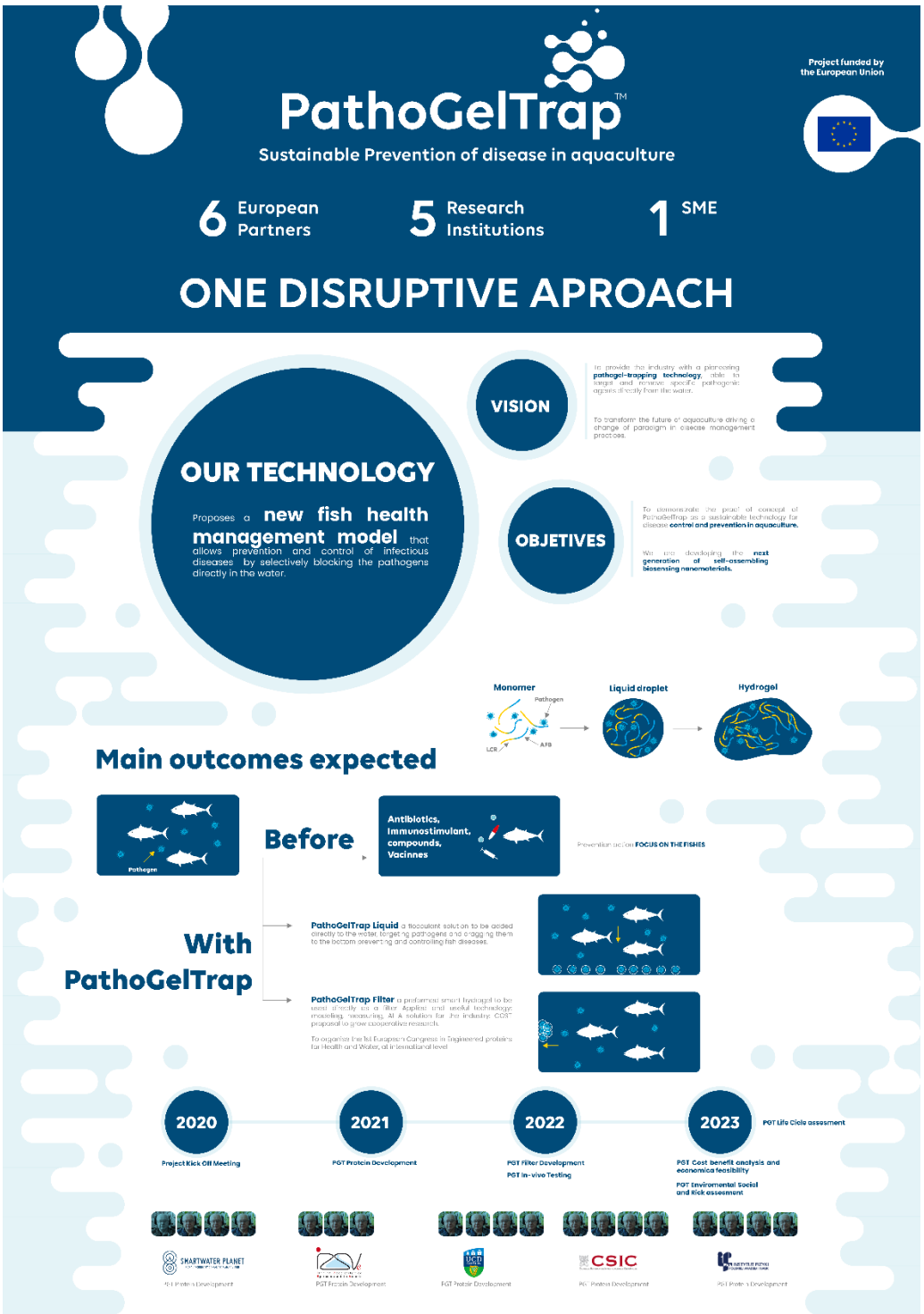
(Mainly focusing into the first 18 months of the project – to be kept updated)

DATE	LOCATION	DETAILS
March 2021	Online	American Physical Society March Meeting; large programe in biophysics, including the intrinsically disordered proteins
May 2021	Copenhagen, Denmark	25th Annual workshop of National reference laboratories for fish diseases https://www.eurl-fish-crustacean.eu/
May 09-12, 2021	Maastricht, Netherlands	International Biotechnology Symposium. This symposium will showcase frontline science that will form the basis for future commercial innovation. The scientific program reveals an excellent line-up of plenary lectures and invited speakers. It will cover areas like Production of biologicals, Genome editing, Bioengineering, Biocatalysis & metabolic engineering, Biotechnology for the environment and energy, and Grand challenges for biotechnology. https://iupac.org/event/19th-international-biotechnology-symposium/
June 9-10, 2021	Pordenone, Italy	AQUAFARM 2021 The event dedicated to the sustainable production of food from water. International conference & trade show on aquaculture, algaculture, shellfish farming and fishing industry. http://www.aquafarm.show/en/
July 12-13, 2021	Ottawa, Cánada	Fish Pathology and Parasitology Conference The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Fish Pathology and Parasitology Conference. https://waset.org/fish-pathology-and-parasitology-conference
August 2021	Atlanta, GA, USA and online	American Chemical Society Fall Meeting; Includes a large program in biochemistry
August 24-27, 2021	Throndheim, Noruega	Aqua Nor International Aquaculture Tradeshow Since 1979, Aqua Nor has been an important international meeting place for the aquaculture industry, and it is today the world's largest aquaculture technology exhibition. In recent years, the Aqua Nor exhibition has drawn about 20,000 visitors from up to 76 nations to its halls. All the

		latest innovations of importance are presented to the industry. https://www.aquanor.no/
August 29 – September 09, 2021	Aberdeen, Scotland	The 20th International Conference on Diseases of Fish and Shellfish (EAFP Congress) https://www.delegate-reg.co.uk/eafp-2021/
September 2021	Warsaw, Poland and online	2021 Fall Meeting of EMRS; European Materials Research Society; includes lectures on biological materials
October 2021	Messina, Italy	26th Congress of the Italian Fish Pathology Association (SIPI) SIPI was founded in 1987 in Padua. The aim of the society is to promote, encourage and develop studies and research in the field of aquatic animal pathology and anything directly or indirectly related to it, to disseminate practical applications, and to foster and co-ordinate relations with scientific institutions and individual experts in the field, both nationally and internationally. https://www.sipi-online.it/
October 4-7, 2021	Funchal, Madeira, Portugal	Aquaculture Europe 2021 International event, Scientific meeting of the European Aquaculture Society and Tradeshow https://aquaeas.org/Meeting/AE2021
October 28-29, 2021	Los Angeles, EEUU	Managing Livestock and Animal Diseases Conference The conference aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Managing Livestock and Animal Diseases Conference. https://waset.org/managing-livestock-and-animal-diseases-conference-in-october-2021-in-los-angeles
October 31 - November 2, 2021	Sitges, Barcelona, Spain	International Conference on AgriFood Biotechnology https://www.elsevier.com/events/conferences/EEBconference/about
November 15-19, 2021	Merida, Mexico	World Aquaculture International event, Scientific meeting of the World Aquaculture Society and Tradeshow https://www.was.org/meeting/code/WA2021
February 2022	San Francisco, CA, USA	Annual Meeting of the Biophysical Society. The largest biophysics meeting in the world
February 08-09, 2022	Amsterdam, Netherlands	ICERAMM 2022: 16. International Conference on Ecological Risk Assessment, Management and Monitoring https://waset.org/ecological-risk-assessment-management-and-monitoring-conference-in-february-2022-in-amsterdam

February - March, 2022	Chicago, IL, USA	American Physical Society March Meeting; large programe in biophysics, including the intrinsically disordered proteins
March 2022	San Diego, CA, USA	American Chemical Society Spring Meeting
April 15-16, 2022	Lisbon, Portugal	ICEARA 2022: 16. International Conference on Environmental Assessment and Risk Assessment https://waset.org/environmental-assessment-and-risk-assessment-conference-in-april-2022-in-lisbon
June 10-11, 2022	Barcelona, Spain	ICEAP 2022: 16. International Conference on Environmental Assessment and Prediction https://waset.org/environmental-assessment-and-prediction-conference-in-june-2022-in-barcelona
September 2022	KU Leuven, Belgium	FOODSIM-EUROSIS FOODSIM will bring together researchers, food experts, and industrial users to present state-of-art research, new research results, and to exchange ideas and experiences in the modeling and simulation tools used for food processing, quality, safety and sustainability. The general conference theme is "Sustainable Food Production in a time of Climate Change". https://www.eurosis.org/
September 22-23, 2022	Granada , Spain	XIII Meeting of the Specialized Group in Microbiology of the Aquatic Environment of the Spanish Society of Microbiology.
Postponed from March 2020 due to Covid-19 pandemic	Seville, Spain	The International Symposium on Membrane-Less Organelles in Cell Life and Disease The confluence between physicists and cellular and molecular biologists will let us go deeply into the formation of Membrane-Less Organelles (MLOs) by liquid-liquid phase transitions. https://www.fundacionareces.es/fundacionareces/en/events/membrane-less-organelles-in-cell-life-and-disease.html#pestanas-programa1

APPENDIX 5: Project Poster



APPENDIX 6: Media Articles

Se propone un nuevo modelo de gestión de la salud de los peces que permitiría bloquear selectivamente los patógenos directamente en el agua

PathoGelTrap: Hacia una tecnología revolucionaria en la prevención y el control de enfermedades infecciosas en acuicultura

IPac. - 6 de noviembre de 2020

"New Blue Revolution through a pioneering pathogen-trapping technology based on bioselective hydrogel-forming proteins" (PathoGelTrap), este es el nombre del proyecto que, al amparo del Programa Marco Europeo de Investigación y Desarrollo Horizonte 2020, se ha propuesto transformar el futuro de la acuicultura. ¿Cómo? Mediante el desarrollo de una tecnología pionera que permita bloquear selectivamente patógenos específicos, esto es, que sea capaz de atacarlos y eliminarlos en el agua de las piscifactorías sin afectar a los peces y evitando el uso de antibióticos.

El proyecto, que se lanzó en junio de este año, y está coordinado por Enrique Amaré, director general de SmartWater Planet; y Mariano Carrión-Vázquez, Investigador Principal del Instituto Cajal – CSIC, trabajará en el **desarrollo de una herramienta dinámica utilizando los conocimientos actuales sobre las propiedades únicas de las proteínas sometidas a la Separación de Fases Líquido-Líquido** (LLPS; también llamado condensación biomolecular), **que finalmente forman hidrogeles**.

Enrique Amaré, director general de SmartWater Planet, es uno de los dos coordinadores del proyecto PathoGelTrap

Los primeros pasos se centrarán en la realización de un **diseño racional de un biomaterial químérico que vincule una proteína LLPS con un 'afibody'**, que es una proteína pequeña y robusta capaz de unirse a moléculas objetivo (como antígenos microbianos) con alta afinidad, imitando los anticuerpos monoclonales. **Este material biosensorial podrá reconocer y atrapar patógenos de peces en diferentes entornos y condiciones acuáticas**.

La idea final, y las pretensiones del proyecto, explica Enrique Amaré, "es dar con un sistema (filtro, gel, polvo) que no moleste a los peces ni al medio ambiente atrapando a los patógenos antes de que lleguen a afectar la producción". Una solución, añade el director general de SmartWater Planet, "que complementará enormemente nuestra tecnología para la acuicultura inteligente y ecológica".

Mariano Carrión-Vázquez, Investigador Principal del Instituto Cajal – CSIC, es uno de los dos coordinadores del proyecto PathoGelTrap

"En este apasionante proyecto –detalla por su parte Carrión Vázquez- planeamos combinar en una sola proteína híbrida la fascinante capacidad de ciertas proteínas, incluidos los amiloides funcionales implicados en la consolidación de la memoria, para formar condensados biomoleculares con las capacidades de reconocimiento de los afibodies; de modo que el biosistema verde resultante, diseñado por ingeniería, atraparía eficientemente los patógenos de los peces en el agua".

El proyecto PathoGelTrap reúne a reputados expertos en Matemáticas e Ingeniería informática (biología computacional: Instituto Formazione Professionale Assistenti Notarili, modelización de evaluación de riesgos: University College Dublin, y sistemas de control inteligente: SmartWater Planet), Biotecnología (ingeniería de las proteínas, bioquímica, biofísica-Consejo Superior de Investigaciones Científicas), Ciencias de la Salud Animal (salud y bienestar de los peces-Instituto Zooprofilattico Sperimentalle delle Venezie) y Ciencias Sociales (evaluación del ciclo de vida económico, social y ambiental-Vertech Group).

PROFILE

Technology solutions for the aquaculture sector

Carlos Mazorra, Director of Innovation at SMARTWATER PLANET shares with us his thoughts on affordable technology solutions for the aquaculture sector

SMARTWATER PLANET, S.L. provides affordable technology solutions for water quality, health monitoring, zero waste & circular economy in the aquaculture sector.

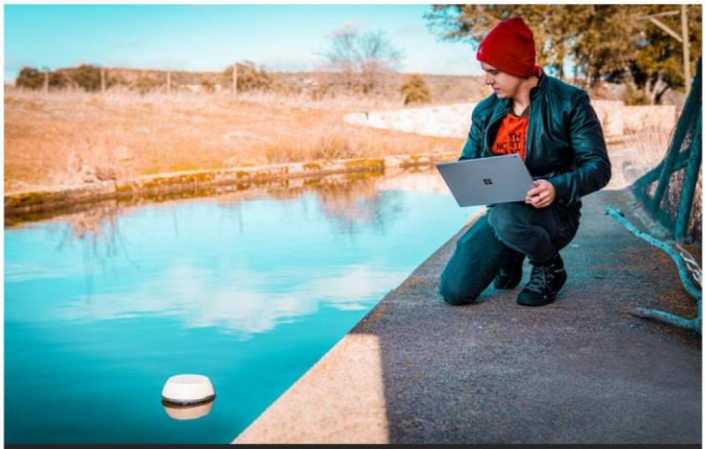
SMARTWATER PLANET is a relatively young company; however, it gathers the expertise of a multidisciplinary team, with more than 20 years of experience in the sector. What sector? Definitely, aquaculture!

"At SMARTWATER PLANET we believe in an aquaculture sector with zero waste and circular economy circuits. We develop affordable technology solutions within an eco-aware and environment integrative framework. Our goal is to contribute to efficient production, water quality monitoring & management solutions, fish health monitoring, and effluent re-utilisation," says CEO Enrique Amaré.

The company's main office is located in Madrid, with agents also based in Northern Spain. The main output of SMARTWATER PLANET are technology products and an array of applications derived from them.

Technology solutions for the aquaculture sector

MEDUSA is an autonomous, rechargeable plug and play multifunctional IoT device continuously measuring real-time water quality, physicochemical parameters. "MEDUSA is a small — 20cm diameter — floating platform



Tests of the Medusa v2.0 Prototype at the Molino de Cega aquaculture centre - January 2021

that can be deployed in a pond or tank, or any other kind of body of water, collecting real-time water quality data, and sending them to SMARTWATER's cloud servers for data management and machine learning model optimisation. There are options for 85 different parameters, with a current configuration of five sensors in the platform (O_2, Temperature, Conductivity, NH4 and pH)," says Amaré.

SmartWater has also developed an IT suite for optimising fish farm production, sustainability and business potential, which combines the advanced sensors of MEDUSA, with a business and production management system (called SMARTWATER CLOUD) enhanced with machine learning capabilities (AI-based software based on smart fish models, and active learning), developed in close cooperation with farmers to ensure user's requirements are met.

EU projects in aquaculture

"We are involved in a number of EU projects, developing and applying our technology to data management, benchmarking, AI and prediction tools," Carlos Mazorra, Director of Innovation notes. "Our R&D is always aiming at putting new products or applications in the market, to offer new solutions to current and persistent production problems, often with a disruptive approach. Take PathoGelTrap, for instance," he adds.

In this EU project, PathoGelTrap, SMARTWATER PLANET coordinates and joins efforts with the scientific expertise of CSIC (Consejo Superior de

Investigaciones Científicas, Spain), IZSV (Istituto Zooprofilattico Sperimentalle del Venezie, Italy), IFPAN (Instytut Fiziky Polskiej Academi Nauk, Poland), UCD (University College Dublin, Ireland), and VerTech (France). PathoGelTrap is founded under the European Framework Programme for R&I, Horizon 2020. Through a pioneering technology based on bio selective hydrogel-forming proteins, the idea is to transform the future of aquaculture with a disruptive pathogen–trapping technology capable of targeting and removing specific pathogens from water in fish farms, without affecting the fish and avoiding the use of antibiotics.

Preventing pathogen infections in intensive aquaculture

Strategies followed to control and prevent pathogen infections in intensive aquaculture have important drawbacks, turning the future sustainability of global fish production into a great challenge. Sustainable solutions for preventing and controlling pathogen hazards are used in organic aquaculture (quarantine, lower fish density, better health management, etc.). However, these solutions are difficult to transfer to intensive farming. In this context, new models to control and prevent pathogen infections are urgently needed for ensuring the longevity and sustainability of the so-called "Blue Revolution".

"PathoGelTrap's envisioned technology proposes a new fish health management model that allows prevention and control of infectious diseases by selectively blocking the pathogens directly in the water, complementing and surpassing the current technological paradigm that focuses on disease prevention through the direct action over the fish by vaccines or broad-spectrum antibiotics which could affect the environment microbiota. Besides, this technology opens the door for a disrupting way for future pathogenic disease control," argues Mazorra.

The application of LLPS is a very innovative field, and the project will integrate computer-based (in silico), in vitro and in vivo methods to design and test PathoGelTrap technology to cover the knowledge gap in self-assembling LLPS biomaterials engineering. PathoGelTrap technology targets two types of pathogens, one virus and one bacterium, to cover a spectrum of pathogens and reduce the risk.

"We will offer two formulations: PathoGelTrap Liquid (flocculant) and PathoGelTrap Filter (gel). These two strategies allow us broad flexibility: PathoGelTrap Liquid could be used in closed farms while the PathoGelTrap Filter could be used also in open farms, in the form of mobile filters," declares Enrique Amaré.

Affordable and intelligent technology solutions

The company is also designing a trout farm near Segovia in central Spain. It will combine several technologies in a holistic approach to procure a low water footprint such as recirculation modules, hydro and geothermal resources, water re-utilisation for vegetable crop production, and the production of organic-certified trout. The farm will be partially supplying trout to a fishery, also part of the business plan, and eventually, organic-certified eyed eggs.

The company is certainly projecting internationally, as the aquaculture market is a global one. "We have recently won a competitive bid for a contract in Italy, on an intelligent solution for the monitorisation and management of the migration of fish-

Enrique Amaré

eries populations in a natural lagoon," Enrique Amaré points out.

"SMARTWATER PLANET aims to deliver accessible, affordable and intelligent technology solutions," says Amaré; "We are ready to lead the leap from personal-experience traditional Aquaculture to AI-supported eco-friendly and economically efficient fish farming. Every aspect of it, from efficient production to water quality management, fish health monitoring, and effluent re-utilisation, is within our interests."

PathoGelTrap No 899616

Medaid No 727315

SMARTWATER PLANET

GLOBAL TECHNOLOGY COMPANY FOR AQUACULTURE

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Proteine intelligenti che catturano virus e batteri dei pesci, così cambierà l'acquacoltura

22 Settembre 2020 | Centro specialistico ittico, Malattie dei pesci, molluschi e crostacei, Ricerche & Attività

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Un gel di proteine che cattura e intrappola virus e batteri direttamente in acqua. Con questa idea semplice e al tempo stesso rivoluzionaria i ricercatori dell'Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe) promettono di cambiare l'acquacoltura nel prossimo futuro. Il progetto PathoGelTrap si propone infatti di innovare le pratiche di gestione delle malattie infettive, fornendo all'industria una tecnologia in grado di rimuovere efficacemente specifici agenti patogeni direttamente dall'acqua.

Grazie alla decennale esperienza nel campo della patologia ittica e alla disponibilità di un Acquario Sperimentale autorizzato, i ricercatori del Centro di referenza nazionale per le patologie dei pesci, molluschi e crostacei dell'IZSVe sperimenteranno l'efficacia di **proteine intelligenti nel riconoscimento e inattivazione dei patogeni**, fornendo un'alternativa sostenibile alla gestione delle malattie in acquacoltura. Il progetto di ricerca rientra nel *Programma H2020-EU.1.2.1 - FET Open*, lo strumento della Commissione europea che incoraggia e sostiene idee radicalmente nuove per la ricerca scientifica e tecnologica del futuro.

L'acquacoltura è il sistema di allevamento per il quale si registra il maggior incremento produttivo negli ultimi anni. Tuttavia, **i modelli di allevamento intensivo sono sottoposti a problematiche infettive** che incidono drasticamente sulla salute dei pesci, sulla produzione alimentare, sull'ambiente e sui profitti di questo settore. Le attuali strategie per controllare e prevenire le infezioni in acquacoltura (principalmente vaccini e antibiotici) presentano importanti inconvenienti, che pongono grandi interrogativi per la sostenibilità futura della produzione ittica globale.

L'IZSVe partecipa al progetto PathoGelTrap, un progetto di ricerca internazionale che ha l'obiettivo di produrre un gel di proteine che cattura e intrappola virus e batteri dei pesci direttamente in acqua, per risolvere le problematiche infettive degli allevamenti intensivi e favorirne la sostenibilità.

Per far fronte a questa problematica, il progetto *PathoGelTrap* prevede di utilizzare le attuali conoscenze sulle proprietà autoassemblanti delle proteine di separazione fase liquido-liquido (LLPS) e degli affibodies (AFB) per costruire un **materiale biomimetico chimerico (chimera LLPS-AFB) che riconoscerà e intrappolerà efficacemente i patogeni dei pesci** (sia virus che batteri) direttamente nell'acqua e li renderà inattivi. Grazie alla versatilità offerta dalle proteine LLPS, si prevede di fornire all'industria due diverse soluzioni:

1. **PathoGelTrap liquido:** la proteina LLPS-AFB funge da agente flocculante da aggiungere direttamente nell'acqua della piscicoltura. La proteina legherà i patogeni bersaglio nell'acqua e successivamente si auto-assemblerà in goccioline liquide che si trasformeranno in idrogel, che trascinerà a sua volta l'agente patogeno sul fondo;
2. **Filtro PathoGelTrap:** verrà prodotto un idrogel LLPS-AFB specifico da utilizzare come filtro preformato che intrappolerà i patogeni mentre passano attraverso i normali sistemi di filtrazione dell'impianto, restituendo all'ambiente l'acqua "ripulita" dai patogeni.

Con un **finanziamento totale di € 2.996.437,50** e 5 partner europei (da Spagna, Italia, Irlanda, Francia, Polonia), sotto il coordinamento di SMARTWATER Fish Farm Software Solution SL (Spagna), il progetto PathoGelTrap rappresenta un progresso significativo nell'ingegneria dei biomateriali, aprendo le porte a un approccio assai promettente per il controllo delle malattie infettive in acquacoltura.

Visita il sito web PathoGelTrap »

PathoGelTrap
Sustainable Prevention in Aquaculture

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APPENDIX 7: Analysis of Social Media Deployment and Initial Impact