MIRACLES
SPECIALTIES FROM ALGAE

D.7.9. Newsletter #3

STATUS:	Final
DUE DATE	M 18
DELIVERY DATE	M 21
APPROVAL	July 20th, 2015, by Macarena Sanz (Task and WP7 Leader) August 4th, 2015, by Hans Reith (Project Coordinator)
Dissemination level of the Deliverable	☒ **PU**: Public ☐ **PP**: Restricted to other programme participants (including Commission Services) ☐ **RE**: Restricted to a group specified by the consortium (including the Commission Services) ☐ **CO**: Confidential, only for members of the consortium (including Commission Services)
Responsible	Macarena Sanz, WP7 and Dissemination Leader

Content

1. Introduction

1.1. Document purpose and scope

The purpose of this document is to describe the elaboration of MIRACLES Newsletter #3, in which all Work Package Leaders have been involved.

MIRACLES Newsletter #3 (see Annex 1), was sent to stakeholders on August 5th, 2015.

1.2. Intended Audience

The dissemination level of this document is public, addressed to all stakeholders identified and publicly released in the website and through social networks.

2. MIRACLES Newsletter #3

2.1. Introduction

The newsletter has the main goal of communicating the progress of the project after the first 18 months of execution, related to the planned activities.

2.2. Design

The content and the design of MIRACLES 3rd Newsletter was developed by IDConsortium (Partner 20), with the agreement and approval of the Project Coordinator (Hans Reith, Wageningen University, Partner 1) and contributions from Work Package Leaders.

The preparation of the Newsletter began two months prior to its delivery to the stakeholders. At that point, all Work Package Leaders were informed about its content and the contributions needed.

2.3. Content

MIRACLES 3rd Newsletter intends to provide an overview of the progress achieved during the first 18 months of the project, highlighting the main objectives of each Work Package.

IDConsortium coordinated the writing of the newsletter with the support of Work Package leaders and the Project Coordinator. The final content was reviewed and approved by the Project Coordinator.

The layout of the Newsletter has the following sections:

1. Editorial (written by Hans Reith, Work Package 8 Leader and Project Coordinator)
2. Articles:

2.1. Innovation in algae cultivation (written by Bert Lemmens, Work Package 1 Coordinator)
2.2. Joint bioprospection campaigns (written by Hans Kleivdal, Work Package 2 Coordinator)
2.3. Development of integrated biorefinery (written by Lolke Sijtsma, Work Package 3 Coordinator)
2.4. Product development and market assessment (written by Philippe Willems, Work Package 4 Coordinator)
2.5. Preliminary conceptual process design models and the evaluation of selected integral value chains (written by Lara Dammer, Work Package 6 Coordinator)

3. MIRACLES 2nd Intermediate Progress Meeting – Antwerp, Belgium, 12-13 May, 2015.

The structure aimed to be reader-friendly, providing images and links in each article directing to MIRACLES website for reading the full article.

2.4. Impact of the 3rd Newsletter:

The Newsletter was sent to a total of 293 stakeholders and the 70 contact people of the MIRACLES partners on August 5th, 2015.

The type of stakeholders who has received the Newsletter is:

- Associations: Around 4% of the stakeholders that received the 1st newsletter were food and feed producers and fertilizers associations.
- Industry: Around 40% of the stakeholders that received the 1st newsletter were industrial stakeholders. The sectors were:
    - Related to microalgae exploitation: 7% of the MIRACLES stakeholders
    - Valorisation of biomass mainly for Fertilizers: 8%the MIRACLES stakeholders
    - Fish Feed Industry: 3% of the MIRACLES stakeholders
    - Fuel: 0,5% stakeholders
    - Human Food and Pharmaceutical Industry: 15% of the MIRACLES stakeholders
    - Chemicals Industry: 4% of the MIRACLES stakeholders
    - Biotechnological companies: 2,5% of the MIRACLES stakeholders
- Public Authorities (EU institutions and regulatory bodies to national and local administration): Around 11% of the stakeholders that received the 1st newsletter were public authorities
- University and Research Centres: Around 45% of the stakeholders that received the 1st newsletter were researchers and scientific representatives:
    - Related to microalgae exploitation: 15% of the MIRACLES stakeholders
    - Valorisation of biomass mainly for Fertilizers: 10% the MIRACLES stakeholders
    - Fish Feed Sector: 2% of the MIRACLES stakeholders
    - Human Food: 6,5% of the MIRACLES stakeholders
    - Pharma, Nutraceuticals and Cosmetics: 11%
    - Chemicals Industry: 0,5% of the MIRACLES stakeholders

The Newsletter was also uploaded to be available in the project website (http://miraclesproject.eu/docs/MIRACLES-Newsletter_3.pdf).

Future newsletters will be designed taking into account industrial needs and concerns. The MIRACLES stakeholder network is continuously being revised in order to engage more stakeholders and to do a more focused dissemination per sector/ industrial group.

ANNEX 1. MIRACLES Newsletter #3

MIRACLES
SPECIALTIES FROM ALGAE

Newsletter

Issue 3 – July 2015

Editorial

Hans Reith, Project Coordinator

The third Newsletter marks the end of the first 18 month period, in which significant progress has been made. In WP1 algae biomass from 4 industrial strains was produced by partner Fitoplancton and delivered to partners for R&D on processing and application. The effect of cultivation parameters on the expression of genes involved in various metabolic pathways was studied, revealing the existence of fine-tune transcriptional regulation mechanisms. These results form the basis for the development of new molecular tools for optimization of target products in the algal biomass during cultivation.

The work on supported amine-based technology for CO_2 capture from air aims at achieving a suitable CO_2 concentration for algae cultivation at minimal cost. For several sorbents a good CO_2 adsorption capacity was found while the stability of sorbents was shown to be an important parameter for optimization. The final aim is to enable stand-alone cultivation in remote areas such as deserts.

The development of innovative membrane based harvesting and medium recycle technologies in the project aims to reduce costs and energy use. Screening tests have shown that the selection of membrane material and pore size is dependent on algae type and that optimum filtration techniques for algae and supernatant are different. Cultivation tests using recycled medium have shown no reduction in algal growth until now, which is an encouraging result.

Good progress has also been made in WP2, which is aimed at bioprospecting and selection of robust, highly productive algal species. Existing microalgae collections in the partner countries have been extended by a sampling program in highly diverse climatological locations (Arctic waters, sub-tropical islands, altiplanic desert). Industrial partners provided a list of target compounds and functionalities with commercial potential. To date, 46 strains have been screened, of which 4 may have industrial potential. To evaluate the productivity potential in different climatic conditions, identical outdoor photobioreactor systems are being installed at partner locations in Norway, Gran Canarias and Chile. This will present a unique opportunity to compare productivity data under (very) different climatic conditions!

Additionally, there has also been interesting progress in the development of integrated biorefinery technology (WP3). Cell disruption methods were tested and compared and it was shown that the application of enzymes or chemical pre-treatment contributes in a positive manner to disruption efficiency.

TMUC pilot scale algae cultivation and harvesting facilities

Several extraction procedures for specialties are under development and work was started on the use of supercritical CO_2 for extraction of algae oils and use of membranes for separating water soluble algae components. This also remains an area of challenges and potential breakthroughs.

In the area of product development and market assessment (WP4), the first samples were tested and indicated the possibility to incorporate whole-cell micro algae in bioplastic compounds and glues for wood panels. In the coming period we expect to produce the first results in different application domains (food, aquafeed, cosmetics, bioactives…).

In WP6, three preliminary conceptual process designs have been developed and a start was made with the evaluation and the environmental and socio-economic assessment. The work on dissemination, exploitation & intellectual property management of the results of the project (WP7) has produced a range of communication tools, including this 6-monthly Newsletter, a roll up banner, brochures, a public website, social networks and a web-based platform for exchange within the consortium. Work on the management and exploitation of intellectual property has also started.

On 12-13 May 2015 the 2nd Intermediate Progress Meeting was held in Antwerpen, Belgium. A highlight of this meeting was the acceleration of the demonstration work through the selection of preliminary, process based, specialty value chains for demonstration. For each value chain an industrial partner was appointed as “champion” to monitor/coordinate the development of the value chain across the Work Packages. Evidently these activities will be closely coordinated with WP6. Another highlight was the visit to the pilot scale algae cultivation and harvesting facilities at partner TMUC in Geel, BE (see photo).

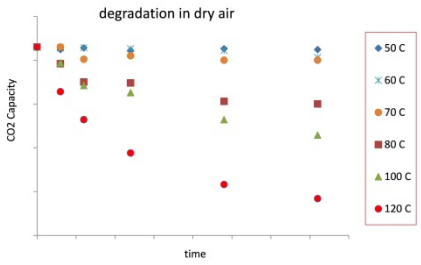
Overall the project shows good progress and I am looking forward to the coming period!

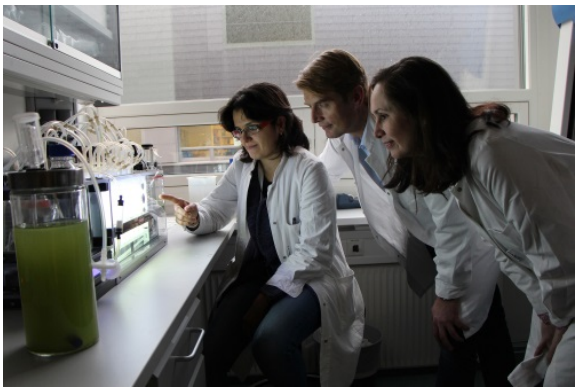
This project has received funding from the European Union’s Seventh Framework Program for research, technological development and demonstration, under agreement no. 613588

Innovation in algae cultivation

Significant progress in the development of molecular technologies to better control the algae culture and quality, characterization and selection of adsorbents for CO2 concentration, harvesting and medium recycle and development of a novel photobioreactor concept.

Read more





Joint bioprospection campaigns

Identification of promising novel microalgae strains with industrial potential from the Arctic, the sub-tropics and the Chilean desert.

Read more

Development of integrated biorefinery technology

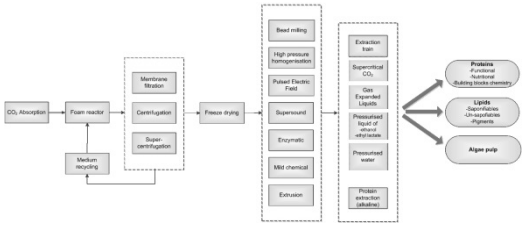
The key findings for 2015 include the chemical characterization of four algae strains, cell disruption and green extraction procedures

Read more

Preliminary conceptual process design models and the evaluation of selected integral value chains

Aiming at the implementation of a techno-economic and sustainability assessment of a multi-product integrated biorefinery for microalgae.

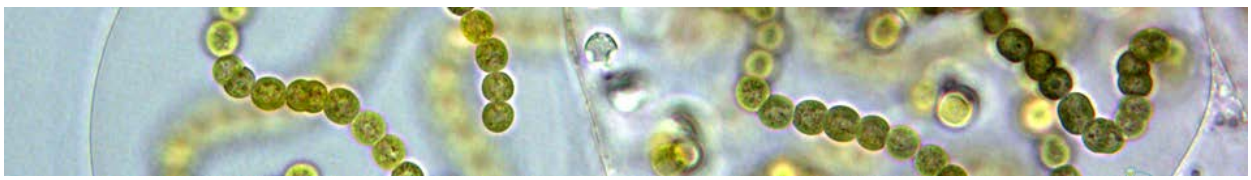
Read more



Product development and market assessment

WP4 is dealing with the back-end of the process: application validation and marketing aspects

Read more



2nd Intermediate Progress Meeting - Antwerp, BE, May 2015

The Project's 2nd Intermediate Progress Meeting took place in Antwerp, Belgium, bringing together all consortium partners for two days on 12th and 13th of May 2015. The meeting started by reviewing the progress of the activities developed during the last six months. In several break-out workshops and plenary sessions the R&D results achieved in each Work Package and the planning for the forthcoming project period were discussed and agreed in detail. A highlight of this meeting was the preparation of the demonstration work via the selection of preliminary, process based, specialty value chains for demonstration.

On the 13th of May the meeting was concluded at the location of project partner Thomas More University College at Geel, where the partners visited the pilot scale algae cultivation and laboratory facilities. The pictures of the meeting can be seen in our Facebook page

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