

Algemene gegevens	
TKI-projectnummer	AF-EU-13007
Titel	FUEL4ME
Topsector en innovatiethema	A&F
Projectleider (onderzoek)	Dorinde Kleinegris
Werkelijke startdatum	01-01-2013
Werkelijke einddatum	31-12-2016
Korte omschrijving inhoud	The 4-year FUEL4ME project will develop a sustainable chain for continuous biofuel production using microalgae as a production platform, thereby making 2nd generation biofuels competitive alternatives to fossil fuels.

Uitvoerende partijen	
Betrokken kennisinstellingen	Wageningen Food & Biobased Research
Overige partijen	Wageningen University, Ben Gurion University of the Negev, Fotosintetica & Microbiologica S.r.l., Norsker Investigaciones, Proviron, Evodos B.V., Cellulac, Feyecon Development and Implementation B.V., Neste Oil Corporation, JOANNEUM RESEARCH Forschungsgesellschaft mbH and IDconsortium SL. (see also http://www.fuel4me.eu)

Resultaten en deliverables	
1. Welke deliverables zijn opgeleverd, en is dit conform het projectplan? (geef een korte beschrijving per deliverable uit het projectplan)	WFBR has realised all deliverables. The FUEL4ME project has achieved significant decreases in production costs of algal lipids, but the production costs for algal biodiesel are still (more than) an order of magnitude too high to make this process commercially attractive in the short term. However, microalgae as source for high-value components such as omega-3 fatty acids for application in food and feed products, has proven to be realistic and cost-effective using microalgae as production organism.
2. Indien bepaalde deliverables niet gehaald zijn, wat was daarvoor de reden?	Within the project all deliverables have been described.
3. Heeft het project onverwachte (neven)uitkomsten opgeleverd, die vooraf niet waren voorzien? Zo ja, benoem deze.	See (5)
4. Op welke wijze is over het	Dissemination of the foreground

<p>project en de resultaten gecommuniceerd</p>	<p>Dissemination strategy</p> <p>The main objectives of communication and dissemination activities have been:</p> <ul style="list-style-type: none"> • To enable an effective and fluent communication within the project and between project partners and other actors relevant to FUEL4ME purposes • To ensure the widest dissemination of project results possible, so they reach their highest potential impact on society • To raise awareness among stakeholders, general public, the scientific community, industry and public authorities • To pave the way for the future commercialization and deployment of the technologies and processes being developed in FUEL4ME. <p>The dissemination and communication strategy intended to establish the proper channels, materials and activities to meet these objectives by:</p> <ul style="list-style-type: none"> • Setting up a Dissemination and Communication infrastructure: website, social networks, intranet • Defining a graphical identity for FUEL4ME project • Producing effective communication materials: project roll-up, brochure • Keeping stakeholders informed about project activities and results: e-bulletin, publications on website and social networks. • Organising and participating in activities to provide the project with opportunities and channels to share their results and interact with different audiences: participation in international conferences, organization of visits to the cultivation plants during the last year of the project • Identifying relevant stakeholders and their interests in the processes and technologies being optimized in the project, and so better customize the dissemination activities and gather information for exploitation purposes. <p>More detailed information on the communication and dissemination strategy, channels, audiences and messages can be found as FUEL4ME deliverable D6.1 Communication and dissemination plan and the list of Conferences and Publications below</p>
<p>5. In hoeverre heeft het project bijgedragen aan de ontwikkeling van de betrokken kennisinstelling(en)? (bijv. wetenschappelijk track record, nieuwe technologie, nieuwe samenwerkingen)</p>	<p>We believe that FUEL4ME's long-term innovation strategy, with initial focus on high value products, will result in economically feasible and environmentally sustainable microalgae-based products. This will ensure a further decrease in production costs and an increase in the scale of production. However, microalgae as source for biofuels seems only viable when the majority of the microalgal biomass is commercialized as high-value chemicals/commodities and the biofuels are a co-product instead of the main product.</p>



6. Krijgt het project een vervolg in de vorm van een nieuw project of een nieuwe samenwerking? Zo ja, geef een toelichting.

Possibilities have been indicated for further development of high value algal products, combined with low/medium value products within new EU or national calls.

Highlights

FUEL4ME: Future European league for microalgal energy . Public summary final report FUEL4Me

The EU funded FUEL4ME (FUTURE European League 4 Microalgal Energy) project was established to evaluate microalgae as potential sustainable source for second-generation biofuels that can compete with fossil fuels. To realise this an increase in the scale of microalgae production needed to be matched with a simultaneous decrease in production costs. The FUEL4ME project has achieved significant decreases in production costs of algal lipids, but the production costs for algal biodiesel are still (more than) an order of magnitude too high to make this process commercially attractive in the short term. However, microalgae as source for high-value components such as omega-3 fatty acids for application in food and feed products, has proven to be realistic and cost-effective using microalgae as production organism.

FUEL4ME aimed at exploiting algae's unique ability to produce high value biomass and lipids efficiently by photosynthesis. Such biomass and lipids could form an excellent starting material for the sustainable production of biofuels and other products such as animal feed. Moreover, microalgae, including the target algae of this project (*Nannochloropsis oceanica* and *Phaeodactylum tricornutum*), do not compete with food crops for land and freshwater as they are grown in sea, saline or other marginal water on unproductive dryland.

FUEL4ME investigated in detail the molecular and metabolic mechanisms governing lipid accumulation in two microalgae species and demonstrated enhanced lipid accumulation by metabolic engineering. Furthermore, we compared the current two-step batch nitrogen starvation production process for microalgal lipids with a newly developed continuous one-step nitrogen limitation process and optimised lipid production under different growth conditions. Researchers developed the various steps of the downstream processing chain, which involved harvesting, cell disruption, lipid extraction and fractionation and hydro-treatment of the lipids to create biofuel. In addition, biorefinery steps to valorise high value molecules such as omega-3 fatty acids, or high quality algae protein, were developed and demonstrated. They were shown to be successfully applicable to microalgae and are now ready to be used in commercial processes, especially for high-value applications in Food & Feed.

The consortium designed and set up three pilot plants for outdoor microalgae production based in Italy, the Netherlands and Israel, respectively, and one demonstration facility in Spain. At outdoor pilot scale it was shown that although with lower lipid content, the one-step N-limitation process had comparable lipid productivity to the traditional N-starvation batch process, but requires further testing for prolonged periods on a large scale.

To determine the actual state of the technology as well as study how key parameters influence the sustainability of the FUEL4ME integrated process a life-cycle assessment (LCA) study was performed. The main influences upon sustainability were cultivation and harvesting, electricity demand especially for PBR cooling, sources of freshwater and carbon dioxide, and suitable land. FUEL4ME has addressed some of these parameters by improving productivity of cultivation, high efficiency thermoregulation of the photobioreactors, and improved harvesting efficiency, including integrated water and resource re-use in cheap desert land. However, further major improvements, will be



needed to make biofuel production with microalgae fully economic and environmentally sustainable. Currently the process is best suited for the production of high value products such as polyunsaturated fatty acids (PUFAs), and a promising biorefinery approach showed to have a strongly improved economic balance. We believe that FUEL4ME's long-term innovation strategy, with initial focus on high value products, will result in economically feasible and environmentally sustainable microalgae-based products. This will ensure a further decrease in production costs and an increase in the scale of production. However, microalgae as source for biofuels seems only viable when the majority of the microalgal biomass is commercialized as high-value chemicals/commodities and the biofuels are a co-product instead of the main product. Both for microalgae cultivation and downstream processing FUEL4ME has provided an excellent opportunity for industrial partners to conduct pilot tests of their technologies, improving them and demonstrating their use within the microalgae field. This has helped to achieve more reliable and scalable industrial solutions.. Additionally, FUEL4ME has generated highly skilled professionals with expertise in algal microbiology and microalgae cultivation and processing systems. By developing knowledge and skills as well as sustainable valorised products from microalgae, the project has made a valuable contribution to Europe's research capacity and bioeconomy. Furthermore, this eco-friendly process has the capacity to reduce dependence on fossil fuels.

Aantal opgeleverde producten			
Wetenschappelijke artikelen	Rapporten	Artikelen in vakbladen	Inleidingen/ workshops/ invited lectures
-	-	13	40

Bijlage: Titels van de producten of een link naar de producten op een openbare website

Link naar Kennisonline:

<http://www.wageningenur.nl/nl/project/Fuel4Me-1.htm>

<https://www.wageningenur.nl/en/show/FUEL4ME-Future-European-League-for-Microalgal-Energy.htm>

<http://www.algaeparc.com/project/3/eu-projects/2/fuel4me>

http://www.fuel4me.eu/index.php?option=com_jdownloads&view=category&catid=9&Itemid=258

Conferences and Publications of Fuel4me participants

A2: List of Dissemination Activities								
N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
1	Other, Presentation	IDC	CommNet Dissemination Training: Communication Strategy Seminar for EU biotech Projects. FUEL4ME General Project Presentation	13-feb-13	Dublin, Ireland	Industry	50	EU
2	Conference	EVODOS	9th ECCE Congress European Conference on Chemical Engineering	21-apr-13	The Hague, Netherlands	Scientific Community, Industry	1900	International
3	Conference, Presentation	EVODOS	European Algae Biomass FUEL4ME General Project Presentation and Progress	24-apr-13	Vienna, Austria	Scientific Community, Industry	300	EU
4	Conference, Presentation	F&M	3rd Int. Conf. on Algal Biomass, Biofuels & Bioproducts FUEL4ME Project Presentation	19-jun-13	Toronto, Canada	Scientific Community, Industry	NA	International
5	Workshop	BIOTOPIC	ALGAENET workshop	03-jul-13	Seville, Spain	Scientific Community, Industry	NA	International
6	Conference	EVODOS, WFBR	Algae Biomass Summit	03-oct-13	Orlando, USA	Industry	600	International
7	Workshop, Presentation	JOANNEUM, WU	Austrian Stakeholder Workshop of IEA Bioenergy Task 42 „Biorefining“ FUEL4ME Project Presentation	24-Oct-13	Graz, Austria	Scientific Community, Industry	50	International
8	Workshop, Presentation	JOANNEUM	Algen als biogene Ressource – Akteure in Österreich FUEL4ME project presentation	06-nov-13	Wieselburg, Austria	Scientific Community, Industry	25	Austria

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N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
9	Workshop, Presentation	F&M	Workshop on: Scaling Algal Production Technologies for the Kingdom of Saudi Arabia Prof Tredici: Invited Lecturer- Presentation of Production Systems and Products	12-nov-13	KAUST Thuwal, Saudi Arabia	Industry	NA	Saudi Arabia
10	Conference	WFBR, F&M	EABA Expo and conference	12-nov-13	Florence, Italy	Scientific Community, Industry	NA	International
11	Congress	EVODOS	International Algae Congress Activities: general Presentation of FUEL4ME project and distribution of brochures and leaflets	05-dec-13	Hamburg, Germany	Scientific Community, Industry, Policy Makers	200	International
12	Conference, Presentation	JOANNEUM	EnInnov2014 – 13th Symposium Energy Innovation Presentation of FUEL4ME within sustainability of algae energy systems topic	13-feb-14	Graz, Austria	Scientific Community, Industry, Policy Makers	600	International
13	Conference, Presentation	WU, F&M	Algae'Chem conference F&M participated with Prof Tredici as invited lecturer WU presented progress on WP1	31-mar-14	Montpellier, France	Industry	300	International
14	Conference, Presentation	WU	YAS conference Presentation 1: WP1 activities of FUEL4ME "Lipid production in <i>Phaeodactylum tricorutum</i> under simulated outdoor conditions"-Ilse Remmers	04-abr-14	Montpellier, France	Scientific community	100	International

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15	Conference, Presentation	F&M	NUTRA-AFRICA Int. Conference Prof Tredici invited lecturer: Microalgae as Food	11-abr-14	Florence, Italy	Scientific community	NA	International
16	Workshop, Presentation	JOANNEUM , WFBR, WU	European Workshop on Life Cycle Analysis of algal based Biofuels	24-abr-14	Belgium, Brussels	Scientific Community, Industry, Policy Makers	50	EU
17	Conference	F&M	6. European Algae Biomass 2014 Opening, chairing and closing of the conference	07-may-14	Seville, Spain	Scientific Community, Industry	NA	EU
18	Conference, Presentation	WU	Dutch conference on biotechnology Presentation of FUEL4ME project	27-may-14	Ede, Netherlands	Scientific Community	150	Netherlands
19	Conference, Presentation	JOANNEUM	22nd European Biomass Conference and Exhibition Presentation: "Towards a Standard Methodology for the Sustainability Assessment of Energy Systems with Algae – An European Approach in FUEL4ME".	24-jun-14	Hamburg , Germany	Scientific Community, Industry, Policy Makers	NA	EU
20	Conference, Presentation	JOANNEUM	Presentation on FUEL4ME at the Algae Event 2014 organized within the project EnAlgae	25-jun-14	Hamburg , Germany	Scientific community, Industry	100	EU
21	Congress, Presentation	F&M	CHIMALI 2014 - X° Congresso Italiano di Chimica degli Alimenti Prof Tredici Invited Lecturer: Microalgae, can	08-jul-14	Florence, Italy	Scientific community, Industry	NA	Italy

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			they contribute to a more sustainable future?					
22	Conference, Presentation	F&M	FEBS-EMBO CONFERENCE – Science and Society Session Presentation; Prof Tredici (Invited Lecturer): Food and biofuels from large-scale algae mass cultures: Opportunities and challenges.	31-ago-14	Paris, France	Scientific Community	Na	International
23	Workshop	JOANNEUM	Algen als biogene Ressource – Forschung in Österreich Participation in workshop	11-sep-14	Duernrohr, Austria	Scientific Community, Industry, Policy Makers	30	Austria
24	Conference, Presentation	BGU	Algae Biomass Summit 2014 Dr Stefan Leu Lectures on general biofuels research and not specifically focused on FUEL4ME, FUEL4ME support was acknowledged.	29-sep-14	Washington DC (USA)	Scientific Community, Industry	NA	International
25	Conference, Presentation	F&M	1st EABA and EC Algae Contractors' Conference and 8th International Algae Congress Prof Tredici Food and biofuels from large-scale algae mass cultures: Opportunities and challenges (invited lecture).	02-dic-14	Florence, Italy	Scientific Community, Industry	500	International

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N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
26	Conference, Presentation	BGU	EMBO 2014 seminar and workshop Euro-Mediterranean microalgae biotechnology Presentation: Enhancing TAG productivity in <i>Phaeodactylum tricornutum</i> by expression of heterologous lipid droplet protein under nitrogen starvation (scientific presentation)	03-may-14	Almeria, Spain	Scientific Community	NA	EU
27	Conference, Presentation	BGU	4th Int. CeBiTec Research Conference Advances in Industrial Biotechnology: Prospects and challenges for the development of algal. Presentation: Expression and localization of <i>Haematococcus pluvialis</i> oil globule protein in " <i>Phaeodactylum tricornutum</i> " (scientific presentation)	21-sep-14	Bielefeld, Germany	Scientific Community	NA	International
28	Conference, Presentation	BGU	ILANIT-7th – the Israel Societies for Experimental Biology (FISEB). Presentation: Expression and localization of an oil globule protein in <i>Phaeodactylum tricornutum</i> using an endogenous stress-activated	10-feb-14	Eilat, Israel	Scientific Community	NA	Israel

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N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
			promoter (scientific presentation)					
29	Conference, Presentation	WU	Scientific Presentation at NBC15 conference Presentation: Two stage Lipid production in <i>Phaeodactylum tricorutum</i> Ilse M. Remmers, Packo P. Lamers, Dirk E. Martens, René H. Wijffels	12-abr-14	Ede, Netherlands	Scientific Community	NA	International
30	Workshop	BGU	Solar Fuels Workshop Dr Stefan Leu, and Dr Khozin-Goldberg attended the workshop The lectures were on our general biofuels research and not specifically focused on Fuels4Me, Fuels4Me support was acknowledged.	17-feb-15	Dead Sea, Israel	Scientific Community, Industry	NA	Israel
31	Symposium, Presentation	F&M	The Royal Swedish Academy of Science Jubilee Symposia. Presentation by Professor M. R. Tredici Food and Biofuels from Microalgae Cultures: Opportunities and Challenges (Plenary lecture).	18-feb-15	Gothenburg, Sweden	Scientific Community, Industry	NA	International

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N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
32	Conference, Presentation	F&M	Conferenza su "L'economia circolare per uno sviluppo sostenibile nella produzione di cibo" Presentation by Professor M. R. Tredici- Algal Walls: cibo, combustibili e prodotti utili da pareti fotosintetiche nella città del futuro	30-abr-15	Firenze, Italy	Scientific Community, Industry	NA	Italy
33	Workshop, Presentation	JOANNEUM	3rd European Workshop "Life Cycle Analysis of Algal based Biofuels & Biomaterials" FUEL4ME WP5 Presentation	11-may-15	Brussels, Belgium	Scientific Community, Industry, Policy Makers	NA	EU
34	Conference	SWR	5th International Conference on Algal Biomass, Biofuels & Bioproducts	10-jun-15	San Diego, USA	Scientific Community, Industry	NA	International
35	Conference, presentation	SWR	International Conference on Microalgae and Biofuels	30-jul-15	Istanbul, Turkey	Scientific Community, Industry	NA	International
36	Conference, presentation	SWR	International Congress and Expo on Biofuels & Bioenergy Biofuels 2015	25-ago-15	Valencia, Spain	Scientific Community, Industry	NA	International
37	Conference, Presentation	BGU	Algae Biomass Summit 2015 Presentation by Dr Stefan. Leu: The lectures were on our general biofuels research and not specifically focused on FUEL4ME, FUEL4ME support was acknowledged.	29-sep-15	Washington DC (USA)	Scientific Community, Industry	NA	International

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38	Poster Presentation	F&M	EABA Strategies for oil and EPA production from <i>Phaeodactylum tricornerutum</i> – Liliana Rodolfi	02-dec-15	Lisbon, Portugal	Scientific Community, Industry	NA	International
39	Conference, Presentation	WU	ESBES: The European Society of Biochemical Engineering Sciences Presentation: Continuous versus batch production of microalgal lipids - Ilse Remmers	11-sep-16	Dublin, Ireland	Scientific Community	NA	EU
40	Conference, Presentation	WU	EU Algae Roadmap Presentation: Continuous versus batch production of microalgal lipids - Ilse Remmers	07-apr-16	Olhão, Portugal	Scientific Community	NA	EU
41	Workshop, Presentation	JOANNEUM	Meeting of the Austrian Algae Network, an oral presentation was held on the topic: Pathways of microalgae for the production of biofuels and biomaterials by Maria Hingsamer	17-nov-15	Vienna, Austria	Scientific Community, Industry	35	Austria
42	Conference, Presentation	JOANNEUM	Maria Hingsamer was asked to present at the 12th European Bioethanol and Bioconversion Technology Meeting the topic "Biofuels from Microalgae – Concepts, Modelling and Life Cycle Analysis"	12-apr-16	Detmold, Germany	Scientific Community, Industry	100	EU

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N o.	Type of activities	Main Leader	Title	Date/Period	Place	Type of Audience	Size of audience	Countries addressed
43	Conference, Poster Presentation	JOANNEUM	Attendance of European Biomass Conference (EUBCE): One poster "Modelling and Assessment of Algae Cultivation for Large Scale Biofuel Production Sustainability and Aspects of Up-scaling of Algae Biorefineries" and one oral presentation "Implementing Strategies of Biorefineries in the BioEconomy" in relation to FUEL4ME.	06-jun-16	Amsterdam, Netherlands	Scientific Community, Industry	NA	EU
44	Conference, Poster Presentation	JOANNEUM	European Roadmap for an Algae-Based Industry The topic "BioEconomy with Algae – Life Cycle Sustainability Assessment of an Algae-Based Biorefinery" was presented at Olhão with a poster presentation	07-aug-16	Olhão, Portugal	Scientific Community, Industry, Policy Makers	NA	EU
45	Conference	JOANNEUM	Maria Hingsamer attended the meeting of the Austrian Algae Network, the ongoing work in FUEL4ME was discussed	31-may-15	Wels, Austria	Scientific Community, Industry	NA	Austria
46	Conference, poster presentation	WFBR	Continuous triacylglycerol production by <i>Nannochloropsis</i>	13-15 dec 16	Madrid, Spain	Scientific community, industry	NA	EU

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			<i>oceanica</i>					
47	Conference	F&M	1st EABA and EC Algae Contractors Conference and 8 th International Algae Contractors	1-3 December	Florence	Scientific Community, Industry	NA	Italy
48	Poster Presentation	F&M	Liliana Rodolfi attended the meeting Alg'n'Chem'2014	31 March-3 April 2014	Montpellier (France)	Scientific Community, Industry	NA	France
49	Presentation	F&M	The 4 th Asia-Oceania Algae Innovation Summit. Liliana Rodolfi et al. "Energy balance and techno-economic analysis of lipid production by <i>Nannochloropsis oceanica</i> cultivated in Green Wall Panels (GWP) and raceway ponds at large scale"	18-21 September 2016	Wuhan	Scientific Community, Industry	NA	China
50	Presentation	F&M	European Roadmap for an algae-based industry. "Liliana Rodolfi et al. "One-step vs to step oil production from <i>Nannochloropsis oceanica</i> and <i>Phaeodactylum tricornutum</i> cultivated outdoors in Green Wall Panels"	6-8 April 2016	Olhao	Scientific Community	NA	Portugal
51	Presentation	F&M	AlgaEurope 2016. Liliana Rodolfi et al. "Lipid production by	13-15 December 2016	Madrid	Scientific Community, Industry	NA	Spain



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			<i>Nannochloropsis oceanica</i> at large scale: energy balance and techno-economic analysis"					
52	Conference	F&M	International CeBiYec Research Conference	21-24	Bielefeld	Scientific Community, Industry	NA	Germany

A1-LIST OF SCIENTIFIC PUBLICATIONS

No.	Title	Main author	Title of the periodical or the series// Name of the conference	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers (if available)/ Website to download the publication	Is open access/ publicly available provided to this publication ?
1	Interactive effects of salinity, high light, and nitrogen starvation on fatty acid and carotenoid profiles in <i>Nannochloropsis oceanica</i> CCALA 804	Alexei Solovchenko, Alexander Lukyanov, Olga Solovchenko, Shoshana Didi Cohen, Sammy Boussiba and Inna Khozin Goldberg	European Journal of Lipid Science and Technology	Volume 116, issue 5	Wiley-VCH Verlag GmbH & Co. KGaA	Weinheim, Germany	2014	635-644	http://www.wiley-vch.de/publish/en/journals/alphabeticalIndex/2114/	No
2	Protein Inference Using Peptide Quantification Patterns	Pieter Lukasse, Twan America	Journal of Proteome Research	Volume 13, issue 7	American Chemical Society	Wageningen, The Netherlands	2014	3191–3199	http://pubs.acs.org/doi/full/10.1021/pr401072g	No
3	"Enhancing TAG productivity in <i>Phaeodactylum tricorutum</i> by expression of heterologous lipid droplet protein under nitrogen starvation" (scientific presentation)	Z. Shemesh, S.Leu, I. Khozin-Goldberg, S. Boussiba	EMBO 2014 seminar and workshop Euro-mediterranean microalgae biotechnology	N/A	Research Centre for Agricultural and Food Biotechnology of the University of Almería. Almería, Spain	Almería, Spain	2014	N/A	http://fuel4me.eu/index.php?option=com_jdownloads&task=download.send&id=1363&catid=8&m=0&Itemid=120	Yes

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4	"Expression and localization of <i>Haematococcus pluvialis</i> oil globule protein in <i>Phaeodactylum tricornutum</i> " (scientific presentation)	Shemesh, Zachor. Leu, Stefan. Khozin-Goldberg, Inna. Boussiba, Sammy	4th Int. CeBiTec Research Conference Advances in Industrial Biotechnology: Prospects and challenges for the development of algal.	N/A	N/A	Biotechnology Center for Interdisciplinary Research (ZiF), Bielefeld University, Germany	2014	N/A	N/A	No
5	"Expression and localization of an oil globule protein in <i>Phaeodactylum tricornutum</i> using an endogenous stress-activated promoter" (scientific presentation)	Shemesh, Zachor. Leu, Stefan. Khozin-Goldberg, Inna. Boussiba, Sammy	ILANIT-7th – the Israel Societies for Experimental Biology (FISEB).	N/A	N/A	Eilat, Israel.	2014	N/A	N/A	No
6	Lipid production in <i>Phaeodactylum tricornutum</i> under simulated outdoor conditions	Ilse M. Remmers, Packo P. Lamers, Dirk E. Martens, René H. Wijffels	Website Wageningen UR	N/A	N/A	Wageningen, The Netherlands	2013	N/A	http://tinyurl.com/nd67ddv	No

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7	Lipid production in <i>Phaeodactylum tricornutum</i> under simulated outdoor conditions (scientific presentation)	Ilse M. Remmers, Packo P. Lamers, Dirk E. Martens, René H. Wijffels	YAS conference	N/A	N/A	Montpellier, France	2014	N/A	N/A	No
8	Lipid production in <i>Phaeodactylum tricornutum</i> under simulated outdoor conditions (scientific presentation)	Ilse M. Remmers, Packo P. Lamers, Dirk E. Martens, René H. Wijffels	Algae'nChem conference	N/A	N/A	Montpellier, France	2014	N/A	N/A	No
9	Two stage Lipid production in <i>Phaeodactylum tricornutum</i> (scientific presentation)	Ilse M. Remmers, Packo P. Lamers, Dirk E. Martens, René H. Wijffels	NBC15 conference	N/A	N/A	Ede, The Netherland	2014	N/A	N/A	No

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10	Strategies for oil and EPA production from <i>Phaeodactylum tricorutum</i>	Liliana Rodolfi ^{1,2} , Alessia Guccione ¹ , Niccolò Bassi ² , Massimo D'Ottavio ² , Giacomo Sampietro ² , Natascia Biondi ¹ , Mario R. Tredici ¹	EABA 1-3 December 2015	N/A	N/A	Lisbon (Portugal)	2015	N/A	N/A	No
11	Continuous versus batch production of microalgal lipids	Ilse M. Remmers, Packo P. Lamers, René H. Wijffels	ESBES conference	N/A	N/A	Dublin, Ireland	2016	N/A	http://fuel4me.eu/index.php?option=com_jdownloads&task=download.send&id=1388&catid=8&m=0&Itemid=120	Yes
12	Economic and social impacts of biofuel and omega-3 fatty acids production from microalgae	Steiner, D., Kaltenecker, I., Hingsamer, M., Jungmeier, G.	N/A	N/A	N/A	N/A	2016	N/A	N/A	No

A1-LIST OF SCIENTIFIC PUBLICATIONS

No.	Title	Main author	Title of the periodical or the series// Name of the conference	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers (if available)/ Website to download the publication	Is open access/ publicly available provided to this publication ?
13	Inducible expression of <i>Haematococcus</i> oil globule protein in the diatom <i>Phaeodactylum tricornutum</i> : Association with lipid droplets and enhancement of TAG accumulation under nitrogen starvation	Zachor Shemesh, Stefan Leu, Inna Khozin-Goldberg, Shoshana Didi-Cohen, Aliza Zarka, Sammy Boussiba	Algal Research	Volume 18	N/A	N/A	2016	321-331	N/A	No

