

MICHELE FABRIS, PhD

EMPLOYMENT HISTORY

Mar 2026 – present	Director Department of Eco-sustainable Marine Biotechnology (BLUEBIO), Stazione Zoologica Anton Dohrn Napoli (SZN), Italy
Jan 2026 – present	Adjunct Associate Professor SDU Biotechnology, Department of Green Technology, Faculty of Engineering, University of Southern Denmark (SDU). Odense, Denmark
Sept 2022 – Dec 2025	Associate Professor SDU Biotechnology, Department of Green Technology, Faculty of Engineering, University of Southern Denmark (SDU). Odense, Denmark
Mar 2021 – Aug 2022	Assistant Professor SDU Biotechnology, Department of Green Technology, Faculty of Engineering, University of Southern Denmark (SDU). Odense, Denmark
Nov 2017 – Oct 2020	Research Fellow Climate Change Cluster, Faculty of Science - University of Technology Sydney (UTS), Australia
Nov 2017 – Oct 2020	Visiting Scientist CSIRO Synthetic Biology Future Science Platform, Brisbane, Australia
Jun 2015 – Oct 2017	Research Associate, Climate Change Cluster, Faculty of Science - University of Technology Sydney (UTS), Australia
Jan 2014 – Jun 2015	Honorary Scholar Climate Change Cluster, Faculty of Science - University of Technology Sydney (UTS), Australia
Feb 2009 – Nov 2013	PhD candidate Center for Plant Systems Biology - Flanders Institute of Biotechnology (VIB). Ghent, Belgium.
May 2008 – Dec 2008	Research Assistant, Department of Evolutionary Experimental Biology, University of Bologna, Italy.

EDUCATION

2013	Doctor of Philosophy (PhD) in Biotechnology and Biochemistry Ghent University, Belgium
2008	Master of Science (MSc) in Cellular and Molecular Biology University of Bologna, Italy
2005	Bachelor of Science (BSc) in Biological Sciences University of Bologna, Italy

SCIENTIFIC FOCUS AREAS

Marine Biotechnology | Synthetic biology | Molecular biology | Biochemistry | Genetics | Natural products biosynthesis

RESEARCH GRANTS

2023	European Commission. AquaBioSens. Fabris M: WP leader (EUR 3.84M, EUR 250K to Fabris M's WP).
2023	SDU Climate Cluster Research Infrastructure grant. Genetic basis of algae-bacteria interactions. Fabris M: PI (DKK 240K, EUR 33K)
2023	Novo Nordisk Foundation Industrial Biotechnology Projects - Green and sustainable chemicals from CO₂: replacing endangered animal sources through high-tech domesticated algae biosynthesis. Fabris M: PI (DKK 2,880,000; EUR ~386,000).

- 2021 Villum Young Investigator Grant - **Bioengineered and compartmentalized bioproduction in photosynthetic microalgae**. **Fabris M**: PI (DKK 7,997,100; EUR ~1,070,000)
- 2017 CSIRO Synthetic Biology Future Science Platform - **A synthetic diatom mini-chromosome for specialised synthetic biology functions in microalgae**. **Fabris M**: PI (A\$ 492,180; EUR~296,000).
- 2016 UTS Research Re-establishment Grant - **MicroRNAs: next-generation tool for algal strain engineering**. **Fabris M**: PI (A\$ 14,923, EUR~9,000).

OUTREACH/NETWORKING GRANTS

- 2024 Novo Nordisk Foundation. **Participation in the International Genetically Engineered Machine competition and Giant Jamboree 2023**. Teaching/outreach grant. **Fabris M**: Co-PI (DKK 250,000; EUR~47,000).
- 2023 Novo Nordisk Foundation. **Participation in the International Genetically Engineered Machine competition and Giant Jamboree 2023**. Teaching/outreach grant. **Fabris M**: Co-PI (DKK 250,000; EUR~47,000).
- 2023 Erasmus+ Staff Mobility for Training. **Fermentalg (Libourne, France)**. Training exchange grant. **Fabris M**: main applicant (EUR 1.000).
- 2023 Erasmus+ Staff Mobility for Teaching. **University of Bologna (Italy)**. Teaching exchange grant. **Fabris M**: main applicant (EUR 1.000).
- 2021 Danish Agency for Higher Education and Science - **ANBISSION - Arctic Networking for Biotechnology Mission**. Networking grant. **Fabris M**: Co-PI (DKK 287,984; EUR ~38,400).
- 2019 Theo Murphy Initiative – Australian Academy of Sciences - **Kick-starting the Australian Bio-economy with Synthetic Biology**. Workshop organization grant. **Fabris M** proposal co-developer, member of the Organizing Committee (A\$ 29,900, EUR~18,000).

ORGANIZATION OF CONFERENCES AND WORKSHOP

- 2020 **4th International Conference on Plant Synthetic Biology, Bioengineering, and Biotechnology**, Copenhagen (Denmark). **Member of the Organising Committee**.
- 2019 **Kick-starting the Australian Bio-economy with Synthetic Biology**, satellite event within the Synthetic Biology Australasia Conference 2019. Brisbane (Australia). **Co-organiser**.
- 2018 **UTS:C3 Colloquium on Algal Phenomics, Sydney** (Australia). **Co-organiser**.
- 2012 **How to reconstruct a pathway/genome database**, workshop within the International Diatom Symposium 2012 Ghent (Belgium). **Co-organiser**.
- 2012 **International Diatom Symposium**. 2012. Ghent (Belgium). **Member of the organising team**

ASSESSOR AND COMMITTEE MEMBER ACTIVITY

Assessor for national funding agencies: European Research Council (ERC), Natural Sciences and Engineering Research Council of Canada (NSERC), Research Council of Norway (RCN)

Member of the steering committee for international projects: DiatOmicBase: A genome portal to enable research on diatoms. GB Moore Foundation, PIs: Bowler C, Falciatore A). [Link](#)

External censor for Master and PhD theses in international universities.

Chairperson for Danish PhD Defenses (2)

EDITORIAL AND PEER-REVIEW ACTIVITY

Invited reviewer for several journals including *New Phytologist*, *ACS Synthetic Biology*, *The Plant Journal*, *Biotechnology Advances*, *Frontiers in Plant Sciences*, *Biotechnology for Biofuels*, *Algal Research*, *Scientific Reports*, *Aquatic Microbial Ecology*, *Journal of Applied Phycology*,

TEACHING ACTIVITY

Teacher and examiner in Advanced Protein and Bioproducts Technologies (10 ECTS), SDU (2021-2025) and Basic Microbiology and Biochemistry (5 ECTS), SDU (2023-2025)

Project supervisor and examiner in Analytical chemistry and applied statistics (5 ECTS). SDU (2021)

Guest lecturer and lead instructor on field laboratory course (*Heron Island Research Station*, QLD, Australia) Marine Productivity and Climate Change (6 credit points, BSc). UTS (2018)

Guest lecturer in Environmental Biotechnology (6 credit points, BSc). UTS (2015-2019)

INVITED AND SELECTED TALKS

Sustainable Photosynthetic Microbes for Sustainable Development 2025, (online conference). **Invited speaker**
Molecular Life of Diatoms 2025 (Ghent, Belgium). **Keynote speaker**
Nordic Algae Symposium 2024 (Copenhagen, Denmark). **Keynote speaker**
Fermentalg (Libourne, France). **Invited seminar**
ALGAEFARM 2022 (Pordenone, Italy). **Invited speaker**
University of Southern Denmark 2022, Faculty of Natural Sciences. **Invited seminar**
University of Copenhagen. 2022. Department of Plant Biology (Denmark). **Invited seminar**
CSIRO Synthetic Biology Seminar Series. 2020 (Australia) **Invited seminar**
Synthetic Biology Australasia Sydney Meet-Up. 2020 (Australia). **Invited speaker**
Synthetic Biology Australasia. 2019. Brisbane (Australia). **Selected talk**
Macquarie University. 2018. Molecular Bioscience Department. Sydney (Australia). **Invited seminar**
University of Queensland. 2017. AIBN, Brisbane (Australia). **Invited seminar**

PROFESSIONAL DEVELOPMENT COURSES ATTENDED

2024 "Enhance Research Leadership". University of Southern Denmark (SDU). Odense, Denmark
2023 "New to Research Leadership". University of Southern Denmark (SDU). Odense, Denmark
2022 "PhD Students Supervision Workshop". University of Southern Denmark (SDU). Odense, Denmark
2021 "Lecturer Training Program". University of Southern Denmark (SDU). Odense, Denmark
2018 "Research Independence Course". University of Technology Sydney (UTS). Sydney, Australia
2016 "Research Supervisor Workshop". University of Technology Sydney (UTS). Sydney, Australia
2012 "Technology Transfer Course". Flanders Institute of Biotechnology (VIB). Ghent, Belgium.

PARTICIPATION TO FIELD RESEARCH ACTIVITIES

2025 "MicroSHIFT" research cruise. (2 May – 4 June 2025), onboard of Kronprins Haakon R/V

PUBLICATIONS

1. Morelli L, Jensen C, Arnspang CE, **Fabris M**. Modular Expression of *Botryococcus braunii* Genes Enhances Isoprenoid Production in the Diatom *Phaeodactylum tricornutum*. **2026**. *ACS Synthetic Biology* Article ASAP DOI: 10.1021/acssynbio.5c00898
2. Patwari P, Moses T, Arnspang CE, **Fabris M**. Real-Time Tracking of Intracellular Prenyl Phosphate Pools in the Marine Diatom *Phaeodactylum tricornutum* with a Metabolite Protein-Based Biosensor. **2026**. *ACS Synthetic Biology* 2026 15 (2), 437-451
3. Patwari P, Pruckner F, Morelli L, **Fabris M**. Repurposing the diatom periplastidial compartment for heterologous terpenoid production. **2025**. *bioRxiv* 2025.12.05.692597
4. Pruckner F, Morelli L, **Fabris M**. Isoprenoids in eukaryotic phytoplankton: metabolic diversity, eco-physiology and biotechnological opportunities. *Plant Physiology*. **2025**. 199(1), k1af314
5. Sansone C, Russo MT, Paris D, Pistelli L, Maselli M, Corato F, Tramice A, Iodice A, Margiotta F, Smerilli A, Balzano S, Del Prete F, **Fabris M** and Brunet C. The color within light is a crucial cue that impacts key metabolites and vitamins in the diatom *Odontella aurita*. **2025** *Front. Photobiol.* 3:1715336.
6. Morelli L, Patwari P, Pruckner F, Bastide M, **Fabris M**. Specific light-regime adaptations, terpenoid profiles and engineering potential in ecologically diverse *Phaeodactylum tricornutum* strains. *Algal Research* 86, 103920. **2025**.
7. Pruckner F, Morelli L, Patwari P, **Fabris M**. Remodeling of the terpenoid metabolism during prolonged phosphate depletion in the marine diatom *Phaeodactylum tricornutum*. *Journal of Phycology*. 6/2025, **2025**. 61(3), pp. 512–528
8. Trevisan N, **Fabris M**, van der Oost, J, Barbosa, M, D'Adamo, S. Heterologous production of β -pinene in the chloroplast of the marine diatom *Phaeodactylum tricornutum*. *New Biotechnology*. **2025**. **90**, pp. 174–184
9. Villar E, Zweig N, Vincens P, Cruz d C H, Duchene C, Liu S, Monteil R, Dorrell R G, **Fabris M**, Vandepoele K. DiatOmicBase: a versatile gene-centered platform for mining functional omics data in diatom research. *The Plant Journal* 121(6), e70061. **2025**.
10. Windhagauer M, Doblin M A, Signal B, Kuzhiumparambil U, **Fabris M**, Abbriano R M. Metabolic response to a heterologous poly-3-hydroxybutyrate (PHB) pathway in *Phaeodactylum tricornutum*. *Applied Microbiology and Biotechnology* 108(1), 104. **2024**.
11. Patwari P, Pruckner F, **Fabris M**. Biosensors in microalgae: A roadmap for new opportunities in synthetic biology and biotechnology. *Biotechnology Advances* 68, 108221. **2023**.
12. Poveda-Huertes D, Patwari P, Günther J, **Fabris M**, Andersen-Ranberg J. Novel transformation strategies improve efficiency up to 10-fold in stramenopile algae. *Algal Research* 74, 103165. **2023**.
13. Abbriano R M, George J, Kahlke T, Commault A S, **Fabris M**. Mobilization of a diatom mutator-like element (MULE) transposon inactivates the uridine monophosphate synthase (UMPS) locus in *Phaeodactylum tricornutum*. *The Plant Journal* 115(4), 926-936. **2023**.
14. Plan M, Bongers M, Bydder S, **Fabris M**, Hodson M P, Kelly E, Krömer J, Perez-Gil J, Peng B, Satta A, Claudia V. Analysing intracellular isoprenoid metabolites in diverse prokaryotic and eukaryotic microbes. *Methods in*

15. Commault A S, Kuzhiumparambil U, Herdean A, **Fabris M**, Jaramillo-Madrid A C, Abbriano R M, Ralph P J, Pernice M. Methyl jasmonate and methyl- β -cyclodextrin individually boost triterpenoid biosynthesis in *Chlamydomonas Reinhardtii* UVM4. *Pharmaceuticals* 14(2), 125. **2021**.
16. Jaramillo-Madrid A C, Abbriano R, Ashworth J, **Fabris M**, Pernice M, Ralph P J. Overexpression of key sterol pathway enzymes in two model marine diatoms alters sterol profiles in *Phaeodactylum tricornutum*. *Pharmaceuticals* 13(12), 481. **2020**.
17. Commault A S, Walia N K, **Fabris M**, Barolo L, Siboni N, Adriaans J, Ralph P J, Pernice M. Effect of biphasic temperature regime on therapeutic recombinant protein production in the green alga *Chlamydomonas reinhardtii*. *Algal Research* 50, 101997. **2020**.
18. Jaramillo-Madrid A C, Ashworth J, **Fabris M**, Ralph P J. The unique sterol biosynthesis pathway of three model diatoms consists of a conserved core and diversified endpoints. *Algal research* 48, 101902. **2020**.
19. George J, Kahlke T, Abbriano R M, Kuzhiumparambil U, Ralph P J, **Fabris M**. Metabolic engineering strategies in diatoms reveal unique phenotypes and genetic configurations with implications for algal genetics and synthetic biology. *Frontiers in Bioengineering and Biotechnology* 8, 513. **2020**.
20. Barolo L, Abbriano R M, Commault A S, George J, Kahlke T, **Fabris M**, Padula M P, Lopez A, Ralph P J, Pernice M. Perspectives for glyco-engineering of recombinant biopharmaceuticals from microalgae. *Cells* 9(3), 633. **2020**.
21. **Fabris M**, George J, Kuzhiumparambil U, Lawson C A, Jaramillo-Madrid A C, Abbriano R M, Vickers C E, Ralph P. Extrachromosomal genetic engineering of the marine diatom *Phaeodactylum tricornutum* enables the heterologous production of monoterpenoids. *ACS synthetic biology* 9(3), 598-612. **2020**.
22. **Fabris M**, Abbriano R M, Pernice M, Sutherland D L, Commault A S, Hall C C, Labeeuw L, McCauley J I, Kuzhiumparambil U, Ray P, Ralph P. Emerging technologies in algal biotechnology: toward the establishment of a sustainable, algae-based bioeconomy. *Frontiers in Plant Science* 11. **2020**.
23. Jaramillo-Madrid A C, Ashworth J, **Fabris M**, Ralph P J. Phytosterol biosynthesis and production by diatoms (Bacillariophyceae). *Phytochemistry* 163, 46-57. **2019**.
24. Commault A S, **Fabris M**, Kuzhiumparambil U, Adriaans J, Pernice M, Ralph P J. Methyl jasmonate treatment affects the regulation of the 2-C-methyl-D-erythritol 4-phosphate pathway and early steps of the triterpenoid biosynthesis in *Chlamydomonas reinhardtii*. *Algal Research* 39, 101462. **2019**.
25. Pollier J, Vancaester E, Kuzhiumparambil U, Vickers C E, Vandepoele K, Goossens A, **Fabris M**. A widespread alternative squalene epoxidase participates in eukaryote steroid biosynthesis. *Nature microbiology* 4(2), 226-233. **2019**.
26. Ramarajan M, **Fabris M**, Abbriano R M, Pernice M, Ralph P J. Novel endogenous promoters for genetic engineering of the marine microalga *Nannochloropsis gaditana* CCMP526. *Algal Research* 44, 101708. **2019**.
27. Vavitsas K, **Fabris M**, Vickers C E. Terpenoid metabolic engineering in photosynthetic microorganisms. *Genes* 9(11), 520. **2018**.
28. Matthijs M, **Fabris M**, Obata T, Foubert I, Franco-Zorrilla J M, Solano R, Fernie A R, Vyverman W, Goossens A. The transcription factor bZIP14 regulates the TCA cycle in the diatom *Phaeodactylum tricornutum*. *EMBO Journal* 36(11), 1559-1576. **2017**.
29. Murray S A, Suggett D J, Doblin M A, Kohli G S, Seymour J R, **Fabris M**, Ralph P J. Unravelling the functional genetics of dinoflagellates: a review of approaches and opportunities. *Perspect. Phycol* 3(1), 37-52. **2016**.
30. Matthijs M, **Fabris M**, Broos S, Vyverman W, Goossens A. Profiling of the early nitrogen stress response in the diatom *Phaeodactylum tricornutum* reveals a novel family of RING-domain transcription factors. *Plant Physiology* 170(1), 489-498. **2016**.
31. Kim J, **Fabris M**, Baart G, Kim M K, Goossens A, Vyverman W, Falkowski P G, Lun D S. Flux balance analysis of primary metabolism in the diatom *Phaeodactylum tricornutum*. *The Plant Journal* 85(1), 161-176. **2016**.
32. **Fabris M**, Matthijs M, Carbonelle S, Moses T, Pollier J, Dasseville R, Baart G J, Vyverman W, Goossens A. Tracking the sterol biosynthesis pathway of the diatom *Phaeodactylum tricornutum*. *New Phytologist* 204(3), 521-535. **2014**.
33. Van Moerkercke* A, **Fabris M***, Pollier J*, Baart G J, Rombauts S, Hasnain G, Rischer H, Memelink J, Oksman-Caldentey K, Goossens A. *CathaCyc*, a metabolic pathway database built from *Catharanthus roseus* RNA-Seq data. *Plant and Cell Physiology* 54(5), 673-685. **2013**. (*=co-first authorship)
34. **Fabris M**, Matthijs M, Rombauts S, Vyverman W, Goossens A, Baart G J. The metabolic blueprint of *Phaeodactylum tricornutum* reveals a eukaryotic Entner–Doudoroff glycolytic pathway. *The Plant Journal* 70(6), 1004-1014. **2012**.

Journal covers linked to peer-reviewed articles

1. **Nature Microbiology** ([link](#)) February 2019 issue
2. **Phytochemistry** ([link](#)) July 2019 issue

Science communication, outreach and press outputs

1. Better Living Through Algae Biotechnology. Article in **The Scientist**, featuring **Fabris M**'s research (**2024**): <https://www.the-scientist.com/better-living-through-algae-biotechnology-72107>
2. Bioengineered phytoplankton for heavy metal pollution detection. News on **Aquabiosens** (**2024**) <https://www.aquabiosens.eu/news/bioengineered-phytoplankton-for-heavy-metal-pollution-detection/>
3. Engineered algae can be used to measure pollution in water. **SDU News article** (**2024**)

4. https://www.sdu.dk/en/om-sdu/fakulteterne/teknik/nyt_fra_det_tekniske_fakultet/modificerede-alger-kan-maale-forurening
5. Modificerede mikroskopiske alger kan måle forurening – som fx tungmetaller – i vand. Press release on Teknisk Fokus (DK): <https://www.tekniskfokus.dk/modificerede-mikroskopiske-alger-kan-maale-forurening-i-vand-som-fx-tungmetaller/>
6. Doing it differently. Outreach post on the **Nature Microbiology blog (2019)**: <https://naturemicrobiologycommunity.nature.com/posts/41231-doing-it-differently>
7. Steroid biosynthesis discovery could rewrite textbooks. Press release on **Sciencedaily.com (2019)** <https://www.sciencedaily.com/releases/2018/11/181126123429.htm>
8. Interview by Synthetic Biology Australasia. Outreach interview on my work for the **Synthetic Biology Australasia society** <https://synbioaustralasia.org/2018/06/07/synbio-profile-interview-michele-fabris/>

