

Dr. Martina Strittmatter

Born 12 June 1981 in Konstanz (Germany)
8 Impasse du 18 Juin 1940, 29250 Saint-Pol-de-Léon, France
Martina.Strittmatter@web.de / Martina.Strittmatter@sams.ac.uk
+33 6 98 49 60 16

Postdoctoral Research

July 2014 – June 2016:

Post-Doctoral Research Assistant in Algal Pathology at the Scottish Association for Marine Science (SAMS, Oban United Kingdom). Principal Investigator: Dr. Claire Gachon

Projects (funding: Genomia Fund)

HERDIR (HERitability of Disease Resistance)

Characterisation of the genetic basis of disease resistance in the model brown alga *Ectocarpus*. Detection and identification of kelp pathogens infecting the brown alga *Saccharina latissima* relevant to Scottish Aquaculture

AEID:

Identification and characterization of pathogens challenging economically relevant microalgae (e.g. *Haematococcus pluvialis*) and development of disease control mechanisms. Project in collaboration with industrial partner in Portugal.

May 2011 – June 2014:

Ingenieur d'Etudes at the Station Biologique de Roscoff (France). Principal Investigator: Dr. Mark Cock and Dr. Susana Coelho

Project (Funding: Marinexus (Interreg)):

Development of RNA interference in brown algae. Project in collaboration with the Marine Biological Association (Plymouth, United Kingdom)

Results:

Development of RNA interference in the brown alga *Fucus serratus* and transfer of this technique to *Ectocarpus* (in progress).

Education

PhD in Marine Sciences (University of Aberdeen) awarded 03 July 2011

June 2007 – December 2010

PhD thesis "Molecular Biology of the *Ectocarpus* / *Eurychasma* pathosystem" at The Scottish Association for Marine Science (SAMS, Oban, United Kingdom)

Funding: ECOSUMMER Marie Curie fellowship for Early Stage Researchers (MEST-CT-2005-20501)

October 2001-August 2006

Master (German equivalent: Diplom) in Biology (University of Konstanz) awarded August 2006, grade 1 (highest possible grade) with emphasis on Plant Biochemistry and Plant Physiology, Plant Pathology, Microbiology and Environmental Toxicology.

Laboratory Skills

- Cell culture: cultivation of macro- and microalgae including isolation, purification and axenisation of strains
Cultivation and isolation of algal pathogens, cultivation of bacteria and fungi
- Microscopy: epifluorescence microscopy and confocal microscopy
- Proteomics: protein extraction and separation (1D et 2D), gel analysis and quantification, mass spectrometry
- Bioinformatics: genome annotation, gene sequence analysis, molecular phylogeny

- RNA interference
- Molecular Biology: extraction and amplification of nucleic acids, gene and protein expression analysis, cloning
- Micromanipulation: microinjection, single-cell isolation and microdissection
- Phenotyping of brown algae
- Biochemistry : ELISA, enzyme activity assays
- Chromatography: High pressure liquid chromatography and gas chromatography

Publications (see Annex for details)

18 publications in peer-reviewed journals
2 publication submitted
4 book chapters

Teaching activities

- 2005: University of Konstanz (Germany). Teaching assistant during practical course (~8h)
- 2006: University of Konstanz (Germany). Co-supervision of a student during a six week laboratory course (~150h)
- 2009: Practical course for Master students at the University of Athens (~ 6h)
- 2015: SAMS (United Kingdom): Two lectures (1h each): Year 2 Biochemistry and Molecular Biology module (Students: SAMS/UHI Marine Science) and Blue Biotechnology module (Master students from IBiolC, Glasgow). Globalseaweed practical course (4h)
- 2015 : Roscoff (France) : Lecture (1 h) and practical course (4 h) for the ALFF PhD students
- since 2009 – present : Co-supervision of interns, students (Master and PhD) and visiting scientists
- July 2015 – present: member of the thesis committee of Noreen Hiegler

Diverse

- 2014: FEMS (Federation of European Microbiological Societies) Research Fellowship (€ 4000).
- 2014 : FEMS / ESCMID (European Society of Clinical Microbiology and Infection Diseases) Joint Fellowship (€ 1000) pour le meilleur projet soumis par un jeune chercheur.
- 2015: FEMS Meeting Grant to present at the EPC6 (European Phycological Congress) in London (£380).
- January 2016: deposit of patent application : PCT/FR2016/050137
- March 2016 : « Qualifications CNU 2016 Maitre de Conférences » (France): section 64 (biochemistry and molecular biology), section 65 (cell biologie)
- Languages : German (mother tongue), English (fluent), French (advanced)

References

Dr. Claire Gachon (SAMS, United Kingdom)

Claire.Gachon@sams.ac.uk

Prof. Soizic Prado (MNHN Paris, France)

sprado@mnhn.fr

Dr. Mark Cock (Station Biologique de Roscoff)

cock@sb-roscoff.fr

Publication list:Publications in peer-reviewed journals:

- 18.) Gachon CMM, **Strittmatter M**, Badis Y, Fletcher K, van West P and Müller DG (accepted). The pathogens of brown algae *Anisolpidium ectocarpii* and *Anisolpidium rosenvingei* define a new order of marine anteriorly uniciliate oomycetes. *European Journal of Phycology*
- 17.) Küpper FC, Peters AF, Shewring D, Sayer M, Mystikou A, Brown H, Azzopardi E, Dargent O, **Strittmatter M**, Brennan D, Asensi A, van West P and Wilce R. (first online: 10.1111/jpy.12417). Arctic marine phyto-benthos of Northern Baffin Island. *Journal of Phycology*.
- 16.) **Strittmatter M**, Guerra T, Silva J and Gachon CMM (2016). A new flagellated dispersion stage in *Paraphysoderma sedebokerense*, a pathogen of *Haematococcus pluvialis*. *Journal of Applied Phycology* 28: 1553-1558
- 15.) Tarver JE, Cormier A, Pinzón N, Taylor RS, Carré W, **Strittmatter M**, Seitz H, Coelho SM and Cock JM (first online doi: 10.1093/nar/gkv578). microRNAs and the evolution of complex multicellularity: Identification of a large, diverse complement of microRNAs in the brown alga *Ectocarpus*. *Nucleic Acids Research*.
- 14.) **Strittmatter M**, Grenville-Briggs LJ, Breithut L, van West P, Gachon CMM and Küpper FC (2016). Infection of the brown alga *Ectocarpus siliculosus* by the oomycete *Eurychasma dicksonii* induces oxidative stress and halogen metabolism. *Plant, Cell and Environment* 39: 259-271
- 13.) Rautenberger R, Fernandez PA, **Strittmatter M**, Heesch S, Cornwall CE, Hurd CL and Roleda MY (2015). Saturating light and not increases carbon dioxide under ocean acidification drives photosynthesis and growth in *Ulva rigida* (Chlorophyta). *Ecology and Evolution* 5: 874-888.
- 12.) Yan EC, Peters AF, Kawai H, Stern R, Hanyuda T, Bárbara I, Müller DG, **Strittmatter M**, Prud'Homme van Peine WF and Küpper FC (2014). Ligulate *Desmarestia* (Desmarestiales, Phaephyceae) revisited: *D. japonica* sp. nov. and *D. dudresnayi* differ from *D. ligulata*. *Journal of Phycology* 50: 149-166.
- 11.) Farnham G*, **Strittmatter M***, Coelho S, Cock JM and Brownlee C (2013). Gene silencing in *Fucus* embryos: Developmental consequences of RNAi-mediated cytoskeletal disruption. *Journal of Phycology* (49): 819-829. *joint first authors
- 10.) **Strittmatter M**, Gachon CMM, Müller DG, Kleinteich J, Heesch S, Tsirigoti A, Katsaros, C, Kostopoulou M and Küper FC (2013). Intracellular eukaryotic pathogens in brown macroalgae in the Eastern Mediterranean, including LSU rRNA data for the oomycetes. *Eurychasma dicksonii*. *Diseases of Aquatic Organisms* (104):1-11.
- 9.) Zambounis A, **Strittmatter M** and Gachon CMM (2013). Chronic stress and disease resistance in the genome model marine seaweed *Ectocarpus siliculosus*. *Aquatic Botany* (104): 147-152.
- 8.) Cock JM, Arun A, Godfroy O, Macaisne N, **Strittmatter M**, Peters AF and Coelho SM (2012). Genomics of brown algae: current advances and future prospects. *Genes and Genomics* 34 (1): 1-5
- 7.) Zambounis A, Gaquerel E, **Strittmatter M**, Salaün J-P, Potin P and Küpper FC (2012). Prostaglandin A₂ triggers a strong oxidative burst in *Laminaria*: a novel defense inducer in brown algae? *Algae* 27 (1): 21-32.
- 6.) Grenville-Briggs LJ, Gachon CMM, **Strittmatter M**, Sterck L, Küpper FC and van West P (2011). A molecular insight into algal-oomycete warfare: cDNA analysis of *Ectocarpus siliculosus* infected with the basal oomycete *Eurychasma dicksonii*. *PLoS ONE* 6 (9): e24500.
- 5.) Lohscheider JN, **Strittmatter M**, Küpper H and Adamska (2011). Vertical distribution of benthic freshwater cyanobacterial *Synechococcus* spp. strains depends on their ability for photoprotection. *PLoS ONE* 6 (5): e20134
- 4.) Gachon CMM, Sime-Ngando T, **Strittmatter M**, Chambouvet A, and Kim GH (2010). Algal diseases: Spotlight on a black box. *Trends in Plant Science* 15 (11): 633-640.
- 3.) Cock JM, (...), **Strittmatter M** (...) and Wincker P. The *Ectocarpus* genome and the independent evolution of multicellularity in the brown algae. *Nature* 465: 617-621.
- 2.) Gachon CMM, **Strittmatter M**, Kleinteich J, Müller DG and Küpper FC (2009). Detection of differential host susceptibility to the marine oomycete pathogen *Eurychasma dicksonii* by Real-Time PCR: Not all algae are equal. *Applied and Environmental Microbiology* 75 (2): 322-328.
- 1.) Küpper H, Setlik I, Seibert S, Prasil O, Setlikova E, **Strittmatter M**, Levitan O, Lohscheider J, Adamska I and Berman-Frank I (2008). Iron limitation in the marine cyanobacterium *Trichodesmium* reveals new insights into regulation of photosynthesis and nitrogen fixation. *New Phytologist* 179, 784-798.

Submitted:

Macaisne N, Liu F, Scornet D, Peters AF, Lipinska A, Perrineau M-M, Henry A, **Strittmatter M**, Coelho SM and Cock JM. The *Ectocarpus* IMMEDIATE UPRIGHT gene encodes a member of a novel family of cysteine-rich proteins that have an unusual distribution across the eukaryotes. *Development*

Book chapters:

IV.) Cock JM, Godfroy O, **Strittmatter M**, Scornet D, Uji T, Farnham G, Peters AF, Coelho SM (2015). Emergence of *Ectocarpus* as a model system to study the evolution of complex multicellularity in the brown algae. In: Evolutionary Transitions to Multicellular Life, Advances in Marine Genomics 2. Ed. by Ruiz-Trillo I and Nedelcu AM. 153-162.

III.) Cock JM, Sterck L, (...), **Strittmatter M**, (...) and Wincker P (2012). The *Ectocarpus* Genome Consortium. The *Ectocarpus* genome and brown algal genomics. In: *Advances in Botanical Research*. Ed. by Piganeau G

II.) Marano AV, Pires-Zottarelli CLA, de Souza JI, Glockling SL, Leñaño E, Gachon CMM, **Strittmatter M** and Gleason FH (2012). Hyphochytriomycota, Oomycota and Perkinsozoa (Supergroup Chromalveolata). In: *Marine Fungi and fungal-like organisms*. Ed. by Jones GEB and Pang K-L., pp. 167-214.

I.) **Strittmatter M**, Gachon CMM and Küpper FC (2009). The ecology of lower oomycetes. In: *Oomycete Genetics and Genomics: Diversity, Interactions and Research Tools*. Ed. by Kamoun S and Lamour K., pp. 25-46.

In preparation:

Strittmatter M, Rad-Menendez C and Gachon CMM. Development of a cryopreservation protocol for the blastocladial pathogen of green algae, *Paraphysoderma sedebokerense*.

Strittmatter M, Peters AF, Müller DG and Gachon CMM. Resistance of the model alga *Ectocarpus* to the oomycete *Eurychasma* is a phenotypically stable and inheritable trait. In preparation for *Journal of Phycology*

Gachon CMM, **Strittmatter M**, Müller DG, Beckmann M, Tsirigoti A, Wawra S, Katsaros C, van West P and Küpper FC. Hypersensitive cell death is a conserved disease resistance mechanism in brown algae. In preparation for *Proceedings of the National Academy of Sciences*

Calmes B, **Strittmatter M**, Jacquemin B, Rousseau C, Badis Y, Cock JM, Destombe C, Valero M and Gachon CMM. Towards aquatic phenomics: introducing nephelometry for non-invasive biomass measurement and growth monitoring of multicellular algae.