



School of Earth and
Environmental Sciences
Ysgol Gwyddorau'r
Ddaear a'r Amgylchedd

International Conference on Mixoplankton

19-20 January 2021

PROGRAMME



MIXOPLANKTON



Ubiquitous protist plankton that engage in photoautotrophy and phagoheterotrophy in the one cell. All mixoplankton are mixotrophs but all mixotrophs (e.g., diatoms) are not mixoplankton.

Marine plankton are organisms that, effectively, drift in the oceans. Photosynthetic microbial plankton, traditionally termed “phytoplankton”, are responsible for 50% of global CO₂ fixation. Some 60% that biomass is then grazed by single-celled “protozooplankton”. However, the last 10 years have seen a paradigm shift in our understanding of this food-web. The dichotomy between “plant-like phytoplankton” and “animal-like protozooplankton” is now recognised as, at best, a gross simplification.

Many “phytoplankton” and “protozooplankton” actually combine photosynthesis (primary production) and feeding (secondary production) in the one cell. These organisms are termed the ***mixoplankton***¹ and, as a functional group, they have a global distribution². Through neglecting to recognise the commonality of mixoplanktonic activity, marine science has literally only been studying half of the physiology and ecology of a major life form on Earth and water quality management and fisheries policies are similarly conflicted. To understand how plankton ecology will react to climate change we need to understand how mixoplankton will respond. The aim of the conference is to review recent developments in mixoplankton research.

The conference is enabled through the EU-funded H2020-MSCA-ITN MixITiN programme. MixITiN, led by Cardiff University, brings together world-class European research and training centres from nine different countries, with skillsets from molecular biology, physiology and computer modelling, to marine and coastal zone management, public and media engagement.

MixITiN funds 11 Early Stage Researchers (ESRs identified in the programme by *); for further information please visit www.mixotroph.org



1 Mitra et al (2016) *Protist* 167:106-120 <https://doi.org/10.1016/j.protis.2016.01.003>; Flynn et al (2019) *J Plankton Res* <https://doi.org/10.1093/plankt/fbz026>

2 Leles et al (2017) *Proc Roy Soc B* <https://royalsocietypublishing.org/doi/10.1098/rspb.2017.0664>; Leles et al. (2019) *Glob Ecol Biogeogr* 28:418-428 <https://doi.org/10.1111/geb.12853>



Day 1 Tuesday 19 January 2021

Time GMT	SPEAKER	TITLE
11:45:00		Arrival
12:00:00		Welcome Address by Professor Ian Hall Head of School, Earth and Environmental Sciences, Cardiff University
Session 1 Chair: Paraskevi Pitta		
12:20:00	Hae Jin Jeong	Degree in mixotrophic abilities of marine dinoflagellates
12:50:00	* Filomena Romano	Ciliate mixotrophy in the ultra-oligotrophic Eastern Mediterranean
13:10:00	Fernando Unrein	Bacterivory by mixoplanktonic phytoflagellates
13:20:00		BREAK
13:30:00	Per J Hansen	Challenges in working with cultured mixoplankton
13:50:00	* Maira Maselli	Ecophysiology of key species of generalist non-constitutive mixoplankton (GNCM)
14:10:00	George McManus	Culture studies with a chloroplast-retaining marine ciliate mixoplankter
14:40:00	Urban Tillmann	Tube feeding in Dinoflagellates
14:50:00		BREAK
Session 2 Chair: Fabrice Not		
15:00:00	Helga Gomes	The emergence and rise of mixoplanktivory in the Arabian Sea
15:30:00	* Joost Mansour	Oceanic Greenhouses, the endosymbiotic non-constitutive mixoplanktonic Radiolaria
15:50:00	* Andreas Norlin	Life in planktonic greenhouses; a systems dynamics approach
16:10:00		BREAK
16:20:00	Dave Caron	Mixoplanktonic Rhizaria: Central Players in Oceanic Food Webs
16:50:00	Aditee Mitra	The Mixoplankton Magnum Opus
17:10:00		END DAY 1



Day 2 Wednesday 20 January 2021

Time GMT	SPEAKER	TITLE
Session 3 Chair: Nathalie Gypens		
12:00:00	Beatriz Reguera	Species traits and population dynamics of pSNCM "mixoHABs"
12:30:00	* Lisa Schneider	Coastal water management under the mixoplankton paradigm
12:50:00	* Jon Lapeyra Martin	The role of mixotrophy in ecosystem dynamics
13:10:00	Michaela E. Larsson	Characterisation of an abundant globally distributed constitutive mixoplankton: myzocytosis, mucospheres and mating
13:15:00	Mengmeng Tong	Quality of prey may induce the DSP toxin production of <i>Dinophysis acuminata</i>
13:20:00	BREAK	
13:30:00	Matt Johnson	Molecular tools for <i>Teleaulux-Mesodinium-Dinophysis</i> complex
14:00:00	* Anna-Adriana Anschutz	Trophodynamics of the cryptophyte- <i>Mesodinium-Dinophysis</i> complex
14:20:00	* Konstantinos Anestis	Functional and comparative genomics to study regulatory and metabolic processes in mixoplankton
14:40:00	Miguel J. Frada	Phagomixotrophy in coccolithophores: eco-physiology and transcriptome evidences
14:45:00	Paolo Lazzari	Investigating primary producer dynamics with multispectral bio-optical models in the Mediterranean Sea
14:50:00	BREAK	
Session 4 Chair: Albert Calbet		
15:00:00	* Nikola Medic	Ecophysiology of key species of constitutive mixotrophs including those contributing to harmful algal blooms (HABs)
15:20:00	* Guilherme Duarte Ferreira	Top down control of marine protists by mixoplankton
15:40:00	* Claudia Traboni	Interactions between mixoplankton and their predators
16:00:00	BREAK	
16:10:00	Suzana G Leles	Models with mixoplankton – worth the pain?
16:40:00	Kevin J Flynn	Mixoplankton growth rates – why are they not higher?
17:00:00	Concluding Comments	

