

GERLI 2024

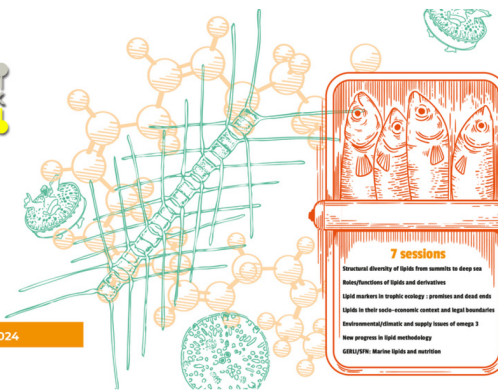


19th GERLI International
Lipidomics meeting

From sea to fork
Lipidol: eus ar mor d'ar fourchetes

IUEM, Brest

23-26 september 2024



Welcome to IUEM, Brest/Plouzané

On behalf of the organising committees, we delighted to welcome you the 19th GERLI Lipidomics meeting.

The meeting is hosted at the European Institute for Marine Studies (IUEM), a multidisciplinary institution in the field of marine and coastal sciences. It is located above “the Goulet de Brest”, a 3 km long - 1.5 km large strait linking the Bay of Brest and the Atlantic Ocean.

GERLI 2024 meeting is bringing together more than 100 leading researchers from 13 countries (UK, Portugal, Ireland, Spain, Hong Kong, Canada, Mauritania, Norway, USA, Belgium, Germany, United Arab Emirates, France).

The meeting will follow a single session format to maximize the opportunity for inter-disciplinary exchanges. We have a schedule planned with, at the time of writing, 13 plenary speakers, 33 oral communications and 39 posters.

Oral communications should last no more than 12 min and will be followed by 3 min questions/discussion. A best oral communication award will be given to young scientist.

We have interspersed the poster sessions through the meeting creating multiple opportunities of scientific exchanges. The pitch of all posters will be presented during a friendly “flash talk session” (1 minute -1 slide) at the first day of the meeting. Posters will be exposed for the whole duration of the meeting.

On Monday 23, a visit of the Bay of Brest is scheduled on Monday 23th from 19:00 to 20:30.

On Tuesday 24th, GERLI association will have its annual assembly prior the Gala dinner at Les Ateliers des Capucins (Brest city center).

On behalf of all organisers of GERLI 2024, we would like to thank all our generous sponsors and we hope you have a memorable week in Brest/plouzané!

You will find below the detailed program of oral communication and the list of presented postes sorted by sessions.





23-26 September, 2024
19TH GERLI MEETING
Plouzané, FRANCE

MONDAY 23 SEPTEMBER

01:45PM - 06:00PM

Opening of the 19th GERLI Meeting

Thesis prices

Session 1 - Structural diversity of lipids from summits to deep sea

Flash poster

Boat tour in Bay of Brest

TUESDAY 24 SEPTEMBER

08:45AM - 05:00PM

Session 2 - Roles/functions of lipids and derivatives

Talk sponsors

Poster session

Session 4 - Lipids in their socio-economic context and legal boundaries

Gala dinner - Ateliers des capucins

PROGRAM



23-26 September, 2024
19TH GERLI MEETING
Plouzané, FRANCE

WEDNESDAY 25 SEPTEMBER

08:45PM - 06:00PM

Session 3 - Lipid markers in trophic ecology : promises and dead ends

Session 5- Environmental/climatic and supply issues of omega 3

Session 6- GERLI/SFN: Marine lipids and nutrition

THURSDAY 26 SEPTEMBER

08:45AM - 12:15PM

Session 7 - New progress in lipid methodology

Poster session

Awards - Junior talks & Senior posters

PROGRAM

13:45 **WELCOME**
P. Soudant & M. Mathieu-Resuge

- 14:00 K. Tighanimine Thesis price GERLI - Glycerol-3-phosphate and Phosphoethanolamine homeostatic switch triggers senescence by rewiring lipid metabolism.
- 14:15 T. Guerbette Thesis price GERLI/SFN - High fat diet induces bioenergetic adaptations of small intestinal epithelial cells reducing cell differentiation and enhancing intestinal permeability in mice

Session 1 **STRUCTURAL DIVERSITY OF LIPIDS FROM SUMMITS TO DEEP SEA**
CHAIR: C. LEBLANC

- 14:30 E. Schneck Plenary speaker - Influence of glycolipids on the physical properties of lipid membranes: insights through x-ray and neutron scattering
- 15:00 S. O'Reilly Biodiversity, bioactivity and lipid diversity of microphytobenthic biofilms from coastal intertidal sediments
- 15:15 Y. Sérès Characterization of digalactosyldiacylglycerol synthases in the model diatom *Phaeodactylum tricornutum*
- 15:30 Flash Poster 1min/poster presentation of all posters

16:15 **COFEE BREAK**

- 16:45 S. Coffinet Plenary speaker - Microbial membrane lipids as a tool to track microbial metabolisms in the environment : case study in continental wetlands
- 17:15 E.J.S. Claereboudt Sterol Biodiversity in Holothuroids
- 17:30 F.F. Hsu Total structural analysis of the diversified lipid in *Micrococcus luteus* cells by multiple stage mass spectrometry with high resolution mass spectrometry
- 17:45 J. Cui Function and biotechnological application of the glycine-glucolipid in the marine bacterium *Alcanivorax borkumensis*

18:15 **BUS FROM PNBI TO BREST HARBOUR**

- 19:00 BRESTOA Tour boat in the Bay of Brest. Departure from Brest harbour (1h30)

Session 2 **ROLES/FUNCTIONS OF LIPIDS AND DERIVATES**
CHAIR: T. DURAND

08:45	J.C.Y. Lee	<u>Plenary speaker</u> - Exploring the Status of polyunsaturated Fatty Acids and Isoprostanooids in Marine Species Exposed to Environmental Stress
09:15	C. Oger	Oxygenated PUFA Metabolites as Biomarkers in Marine Environment
09:30	M. Carletti	The Seipin protein of <i>Phaeodactylum tricornutum</i> : structure and function specificities

09:45 **COFFEE BREAK**

10:15	A. Toussaint	Transcription factors for reprogramming lipid metabolism in response to temperature in the simple green <i>Picoalga ostreococcus tauri</i>
10:30	E. Stahl	Lipid-mediated signalling mechanisms in plant innate immunity
10:45	M. Zonnequin	Characterizing molecular actors from brown algal oxylipin pathways in defense signaling through metabolomics and functional genomics
11:00	C. Doose	Non-enzymatic oxylipin production in a mudflat microphytobenthic biofilm: evidence of diatom response to light
11:15	S. Darnet	Phytosterol metabolism and homeostasis
11:30	S. Yan	Role of peroxisome and peroxisomal β -oxidation in lipid remodeling and plant adaptation to phosphate starvation in higher plants

11:45 **SPONSORS SHORT TALKS**

12:15 **LUNCH**

14:00 **POSTER SESSION**

Session 4 **LIPIDS IN THEIR SOCIO-ECONOMIC CONTEXT AND LEGAL BOUNDARIES**
CHAIR: R. DOMINGUES

15:00	A. Rodrigues	<u>Plenary speaker</u> - An Industry Perspective on Microalgae Lipids: Economics, Regulations, and Societal Impact
15:30	E. Masson	Eating Omega 3 rich products: knowledge and perceptions according to sources
15:45	L. Harrault	Lipid traceability by molecular and isotopic fingerprinting

16:00 **COFFEE BREAK**

16:30	F. Daurès	<u>Plenary speaker</u> - Sardines or how to meet the challenges of sustainability and food security in the context of climate change.
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17:00 **GERLI ASSEMBLY**

19:00	GALA DINNER	Atelier des Capucins - Awards best young posters
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Session 3 **LIPID MARKERS IN TROPHIC ECOLOGY: PROMISES AND DEAD ENDS**
CHAIR: F. SARDENNE

08:45	G. Schaal	<u>Plenary speaker</u> - Lipids and stable isotopes in trophic ecology: what are we actually measuring?
09:15	M. Marinier	Trophic ecology of three deep-sea coral species, interannual comparison using trophic biomarkers
09:30	F. da Costa	Sterol biosynthesis and phytosterol bioconversion in <i>Crassostrea gigas</i> larvae
09:45	A. Bec	<u>Plenary speaker</u> - Impact of dietary lipid compounds on the metabolic rate of an aquatic consumer

10:15 **COFFEE BREAK**

10:45	S. kolodzey	Algae to Alkanes: New insights into the potential of alkanes as detrital biomarkers from kelp degradation experiments
11:00	J.V. Relva	Temperature-driven changes in fatty acids from diatoms to copepods modulate direct effects of temperature on copepod fitness.

Session 5 **ENVIRONMENTAL/CLIMATIC AND SUPPLY ISSUES OF OMEGA 3**
CHAIR: M. VAGNER

11:15	J. Roy	<u>Plenary speaker</u> - Omega-3 fatty acids and their influence on feeding behavior in rainbow trout: unraveling the sensory mechanisms
11:45	L. Ghinter	The heart's energy secrets: lipids to grease mitochondrial performance in sardines, <i>Sardina pilchardus</i>
12:00	M. Péron	Spatial and ontogenetic modulation of fatty acid composition in juvenile European sea bass (<i>Dicentrarchus labrax</i>) from two French estuaries

12:15 **LUNCH**

14:00	F. Beaudoin	<u>Plenary speaker</u> - Production of omega-3 VLC-PUFAs in transgenic <i>Camelina sativa</i> : A vision for extending the story from nutraceutical to therapeutic applications.
14:30	A. Guillot	Processing seafood: a major driver in omega-3 and trace element composition?
14:45	C. Parrish	Replacement of Fish Oil by a High-DHA Microbial Oil in Salmon Diets: Effect on Lipid Molecular Species and Gene Expression
15:00	L. Jeunet	Autotrophic and heterotrophic production of omega-3 long chain polyunsaturated fatty acids (n-3 LC-PUFA) in the Iroise Sea.
15:15	M. Linder	<u>Plenary speaker</u> - Marine lecithin: From rich LC-PUFA sources to health benefits
15:45	N.M. Bandarra	Chub mackerel and quinoa improve brain DHA levels and n-3/n-6 ratio in Alzheimer's disease

Session 6

GERLI/SFN: MARINE LIPIDS AND NUTRITION CHAIR: M. HACHEM

16:00

COFFEE BREAK

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|-------|-------------------|---|
| 16:30 | B. Miralles-Pérez | Metabolic and Brain Effect of Marine Lipids as Phospholipids vs Triacylglycerides on Aged Mice: A Lipidomics plus Proteomics Research |
| 16:45 | M. Hachem | Production, Molecular Modeling and Investigation of Lysophospholipids-DHA Crossing using an in vitro Human Model of Blood Brain Barrier |
| 17:00 | C. Vors | Direct impact of dietary plant-based glycolipids on human gut microbiota and inflammation: first evidence from in vitro models |
| 17:15 | L. Couédelo | Impact of structuring DHA in marine lipids on its intestinal absorption and metabolic fate |
| 17:30 | J. Delarue | <u>Plenary speaker</u> - Marine omega 3 fatty acids and insulin-resistance |

Session 7

NEW PROGRESS IN LIPID METHODOLOGY
CHAIR: L. HARRAULT

08:45	F. Rey	<u>Plenary speaker</u> - Marine lipidomics: a valuable tool to design innovative solutions for the valorisation of marine organisms
09:15	M. Buscaglia	Bioproduction of ¹³ C-labeled docosahexaenoic acid (DHA) by the protist <i>Aurantiochytrium mangrovei</i> and the dinoflagellate <i>Cryptothecodinium cohnii</i>
09:30	H. Launay	In-situ monitoring of lipid hydrolysis at the molecular and supramolecular level by Nuclear Magnetic Resonance
09:45	POSTER SESSION	
10:15	COFFEE BREAK	
10:45	A.P. Alonso	<u>Plenary speaker</u> - Comparative Omics Provide Insights into the Synthesis of Unusual Fatty Acids in Alternative Crops
11:15	A. Meyer	Determination of lipid oxidation status in different matrices and determination of fat parameters for edible oils by NMR
11:30	M.S. Miettinen	The NMRlipids Databank: Enhancing Lipidomics Research through Programmatic Access to Molecular Simulation Trajectories
11:45	M.Y. Golovko	12-Hydroxyeicosatetraenoic acid is the only enzymatically produced HETE increased under brain ischemia
12:00	AWARDS - OLD BONES & BEST YOUNG RESEARCHER TALKS	
12:15	LUNCH	
14:00	Lipidomyste Days	

Session 1**STRUCTURAL DIVERSITY OF LIPIDS FROM SUMMITS TO DEEP SEA**

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| S1-1 | T. Labeled-Veydert | Atmospheric deposition (wet and dry) is a significant source of fatty acids for ecosystems? |
| S1-2 | M.V. Sidi Boune | Taxonomic identification by DNA barcoding of several Mauritanian macroalgae and comparison of their lipid profile |
| S1-3 | J. Lehoux | Multi-step total synthesis of phenolic phytoprostanes |
| S1-4 | E. Chavonet | Exploring the variability of cuticle compounds in different grapevine cultivars |
| S1-5 | R. Pais | Uncovering the Functional Lipidome of <i>Dunaliella salina</i> : Bioactive Lipids with Potential Nutraceutical Applications |
| S1-6 | J. Batista | Upgrading the lipidome of <i>Gelidium corneum</i> biomass and by-products as sources of added-value lipids and bioactive ingredients |
| S1-7 | D. Lopes | Exploring the lipidome of <i>Ulva rigida</i> : Unlocking its potential as a source of bioactive lipids |
| S1-8 | C. Brehelin | Lipid metabolism during dormancy of sweet cherry floral buds: preponderance of 3-hydroxylated FAs in MGDG |
| S1-9 | F. Safi | First characterization of the lipid composition of a giant virus membranes |
| S1-10 | F. Domergue | Functional characterization of a plastidial cytochrome b5-fused $\Delta 4$ desaturase from <i>Ostreococcus tauri</i> in higher plants |
| S1-11 | R. Domingues | Temperature and salinity induce modulation of the lipidome of the microalgae <i>Tetraselmis striata</i> CTP4: a lipidomics investigation |

Session 2**ROLES/FUNCTIONS OF LIPIDS AND DERIVATES**

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| S2-1 | J. Joubès | Investigating herbicide targets in the very long-chain fatty acid biosynthetic pathway |
| S2-2 | A. Sire de Vilar | Lipid dynamics in the Cold-Water Coral <i>Dentomuricea aff. meteor</i> : Effects of ocean warming and reproductive condition |
| S2-3 | T. Durand | Oxidative stress mitigation in horticultural crops using foliar applications of <i>Ilex paraguariensis</i> extract: a dose-dependent study |
| S2-4 | R. Millot | Changes in lipid and fatty acid contents of gonad during the reproductive cycle of the Mediterranean swordfish <i>Xiphias gladius</i> |

Session 3**LIPID MARKERS IN TROPHIC ECOLOGY: PROMISES AND DEAD ENDS**

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| S3-1 | A. Voisin | Cracking the Code: advancing fatty acid analyses in Antarctic benthic species by Gas Chromatography-Mass Spectrometry. |
| S3-2 | M.V. Sidi Boune | The yellow mullet fish oil from the Banc d'Arguin Imrâguens in Mauritania: An example of polyunsaturated fatty acids transfer from diatoms to the fish within the alimentary chain |

Session 4**LIPIDS IN THEIR SOCIO-ECONOMIC CONTEXT AND LEGAL BOUNDARIES**

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| S4-1 | B. Fel | Episomal CRISPR-Cas9 and polyploidization methods for microalgae, production of non-GMO mutants according to UE standards |
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Session 5 LIPIDS IN THEIR SOCIO-ECONOMIC CONTEXT AND LEGAL BOUNDARIES

- S5-1 M. Bertrand Evaluation of n-3 LC PUFA synthesis in the liver of European sardines deficient in DHA for two months
- S5-2 A.S.P. Moreira Seasonal plasticity of algae lipidome in response to environmental variations: evidence from *Ulva rigida* cultivated in a sustainable integrated multi-trophic aquaculture

Session 6 GERLI/SFN: MARINE LIPIDS AND NUTRITION

- S6-1 A. Gomes-Bispo Study of the impact of a diet enriched in chub mackerel and quinoa on the hepatic lipid fraction and its DHA status in Alzheimer's disease
- S6-2 R. Gomes Diets enriched in chub mackerel increase erythrocytes DHA levels and improve omega-3 index in Alzheimer's disease
- S6-3 L. Pruvost Chondroitin sulfate nano vectorized by LC-PUFAs nanocarriers, both extracted from salmon (*Salmo salar*) by green process
- S6-4 T. Conde Polar lipids from marine microalgae show strong anti-inflammatory effects against LPS-induced macrophages
- S6-5 M.C. Michalski Dietary sphingolipids impact circulating ceramide species: new insights using stable isotope tracing of sphingosine in Caco-2/TC7 intestinal cells
- S6-6 V. Ciesielski Quantification of pentadecanoic acid (C15:0) in marine species and dairy products
- S6-7 M. Gerlei Lipolysis of Marine liposomal solutions naturally rich in LC-PUFAs by phospholipases: a comparative *in vitro* gastrointestinal digestion study with marine emulsion.
- S6-8 F. Marques Evaluation of Biosolvents and Ultrasound-Assisted Extraction for Lipid Recovery from *Chlorella vulgaris*, *Fucus vesiculosus* and *Ulva* sp.: A Sustainable Approach for Food and Nutraceutical Applications
- S6-9 N. Barouh Lipid content in Chlorella biomass: variability related to biomass origin

Session 7 NEW PROGRESS IN LIPID METHODOLOGY

- S7-1 N. Gueguen Genome-scale Metabolic Networks for better understanding of lipid metabolism and production
- S7-2 T. Melo Ultrasonic-assisted food-grade extraction using ethanol for obtaining high-value-added lipids from *Nannochloropsis oceanica*
- S7-3 L. Fouillen A combined lipidomic and proteomic profiling of *Arabidopsis thaliana* plasma membrane
- S7-4 B. Yang Resolving Triacylglycerol and Glycerolphospholipid Regioisomers of Marine Lipids Using Mass Spectrometry and Machine Learning
- S7-5 S. Montgrand News insights on plant plasma membrane asymmetry

- S7-6 N. Barouh Release of free fatty acids in *Chlorella* biomass during post-harvesting steps
- S7-7 J. Bertrand-Michel Navigating Lipidomics: Key Challenges and Perspectives in Lipid Nomenclature for Biologists
- S7-8 J. Bertrand-Michel Metatoul-Lipidomic Facility: Cutting-Edge Lipidomics for Metabolic Research
- S7-9 J. Bertrand-Michel MetaboHUB (French national infrastructure in metabolomics and fluxomics for life sciences), towards next generation metabolomics and fluxomics: from population to single cells.
- S7-10 C. Quezada Development of an *in-situ* monitoring system to study the rheological changes during the *in vitro* gastric digestion of O/W emulsions and its impact on intestinal release of free fatty acids
- S7-11 A.P. Alonso Exploring Fatty Acid Synthesis in Alternative Crops via ¹³C-Labeling Approaches

Symposium

