Electronic Supplementary Material (ESI) for Molecular Omics.

Supplementary Table S2 Lipid classes identified in marine invertebrates, extraction and identification methods.

Species name	Common name	Phylum	Part used for analysis	Sample origin	Lipid extraction method	Compound identification equipment	Lipid classes identified	Lipidomics precision level	Study objective	Reference
Berryteuthis magister	Schoolmaster gonate squid	Mollusca	Digestive glands	Wild	Folch et al. 1957[1]	LCMS-IT-TOF & MS/MS	MADAG	Lipid molecular species	Bioprospection	Rybin et al. 2017[2]
Chlamys islandica	Iceland scallop	Mollusca	Digestive gland	Wild	Folch et al. 1957[1]	UHPLC-HRMS-TOF	PC, LPC, DG, TG, CE	Lipid species	Other: Toxicology	Gilabert et al. 2020[3]
Crassostrea hongkongensis	Oyster	Mollusca	Digestive gland	Wild	METB/CH_3OH (1:5, *v/v*)	UHPLC-QTOF-MS & MS/MS	PC, PE, PI, PG, PS, PA, CL, TG, DG, MG, Cer, SM, Hex2Cer, HexCer, CerP, Car	Lipid molecular species	Other: Toxicology	Chang & Wang, 2018[4]
Crassostrea gigas	Japanese oyster	Mollusca	Edible part	Market	Bligh & Dyer, 1959[5]	UHPLC-HILIC-ESI-FTMS	PC, LPC, PE, LPE	Lipid species	Nutrition	Losito et al. 2018[6]
Cyclina sinensis	Clam	Mollusca	Edible part	Market	Matyash et al. 2008[7]	HPLC-QqLIT & MS/MS	PC, PE, PS, LPC, LPE	Lipid molecular species	Nutrition	Liu et al. 2017[8]
Dendronotus robustus	Robust frond-aeolis	Mollusca	Whole organism	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	CAEP, PE, PC, PS, PI	Lipid molecular species	Marine food webs	Imbs & Grigorchuk, 2019[9]
***Dendronotus* sp.**	Nudibranch	Mollusca	Whole organism	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	CAEP, PE, PC, PS, PI	Lipid molecular species	Marine food webs	Imbs & Grigorchuk, 2019[9]
Elysia viridis	Green elysia	Mollusca	Whole organism	Wild	Bligh & Dyer, 1959[5]	HPLC-HLIC-Q-Exactive-ESI-MS & MS/MS	MGDG, DGDG, SQDG, SQMG, DGTS, MGTS	Lipid molecular species	Ecology	Rey et al. 2017[10]
	Green elysia	Mollusca	Whole organism	Wild	Bligh & Dyer, 1959[5]	HPLC-HLIC-Q-Exactive-ESI-MS & MS/MS	MGDG, MGMG, DGDG, DGMG, SQDG, SQMG, DGTS,	Lipid molecular species	Ecology	Rey et al. 2020[11]

							MGTS, PC, LPC, PE, LPE, PG, LPG, PI, LPI, PS, LPS, PA, SM			
***Haliotis discus hannai* Ino**	Japanese abalone	Mollusca	Gonad, viscera and foot muscle	Aquaculture	Folch et al. 1957[1]	UPLC-ESI-QTOF-MS & MS/MS	PC, PE, PS, PG, PA, LPA, TG, DG, MG, ST, terpenoids, FA	Lipid molecular species	Nutrition	Zhang et at. 2018[12]
Loligo chinensis	Mitre squid	Mollusca	Edible part	Market	Folch et al. 1957[1]	NPLC/QExactive-MS & MS/MS	CAEP, *N*-CH_3-CAEP	Lipid molecular species	Nutrition	Wang et al. 2020[13]
***Mactra chinensis* Philippi**	Chinese surf clam	Mollusca	Edible part	Market	Matyash et al. 2008[7]	HPLC-QqLIT & MS/MS	PC, PE, PS, LPC, LPE	Lipid molecular species	Nutrition	Liu et al. 2017[8]
***Mactra veneriformis* Reeve**	Clam	Mollusca	Edible part	Market	Matyash et al. 2008[7]	HPLC-QqLIT & MS/MS	PC, PE, PS, LPC, LPE	Lipid molecular species	Nutrition	Liu et al. 2017[8]
Meretrix lyrate	Hard clam	Mollusca	Soft tissue	Wild	Bligh & Dyer, 1959[5]	HPLC–HRMS-ESI & MS/MS	PE, PC, PS, PI, PG, CAEP	Lipid molecular species	Nutrition	Tran et al. 2019[14]
Meretrix	Clam	Mollusca	Edible part	Market	Matyash et al. 2008[7]	HPLC-QqLIT & MS/MS	PC, PE, PS, LPC, LPE	Lipid molecular species	Nutrition	Liu et al. 2017[8]
Mytilus edulis	Common blue mussel	Mollusca	Whole organism	Market	Folch et al. 1957[1], Bligh & Dyer, 1959[5], Matyash et al. 2008[7]	HPLC-ESI & MS/MS	PC, PE, PS	Lipid molecular species	Other: Extraction method comparison	Yin et al. 2016[15]
		Mollusca	Edible part	Market	Folch et al. 1957[1]	NPLC-QExactive-MS & MS/MS	CAEP	Lipid molecular species	Nutrition	Wang et al. 2020[13]
Mytilus galloprovincialis	Galician mussel	Mollusca	Soft tissue	Market	Bligh & Dyer, 1959[5]	HILIC-ESI-FTMS-Q Exactive & MS/MS	CPE, CAEP, *N*-CH_3-CAEP	Lipid molecular species	Nutrition	Facchini et al. 2016[16]

		Mollusca	Edible part	Market	Bligh & Dyer, 1959[5]	Nano-LC-EI-MS	Free fatty acids	Fatty acids	Other: Method validation	Rigano et al. 2016[17]
		Mollusca	Edible part	Aquaculture	Bligh & Dyer, 1959[5]	HILIC-ESI-FTMS-Q Exactive & MS/MS	PC, PE	Lipid molecular species	Ecology	Facchini et al. 2018[18]
		Mollusca	Edible part	Market	Bligh & Dyer, 1959[5]	RP-ESI-FTMS & MS/MS	Free fatty acids	Fatty acids	Nutrition	Losito et al. 2018[19]
		Mollusca	Edible part	Aquaculture	Bligh & Dyer, 1959[5]	RP-HILIC-IT-TOF-ESI-MS & MS/MS	FFA, Chol, Vit. D3, WE, Tetraterpene, CE, TG, Polyketide, PA, PI, PS, PE, PnE, LPE, CAEP, PC, PnC, LPC, LPnC	Lipid molecular species	Other: characterization	Donato et al. 2018[20]
Neptunea cumingi	Neptunea	Mollusca	Edible part	Market	Folch et al. 1957[1]	NPLC-QExactive-MS & MS/MS	CAEP, *N*-CH_3-CAEP	Lipid molecular species	Nutrition	Wang et al. 2020[13]
Octopus vulgaris	Common octopus	Mollusca	Mantle and tentacles	Wild	Bligh & Dyer, 1959[5]	UHPLC-HILIC-ESI-FTMS	PC, LPC, PE, LPE	Lipid species	Nutrition	Losito et al. 2018[6]
Ostrea edulis	Flat oyster	Mollusca	Edible part	Market	Bligh & Dyer, 1959[5]	UHPLC-HILIC-ESI-FTMS	PC, LPC, PE, LPE	Lipid species	Nutrition	Losito et al. 2018[6]
Ostrea gigas	Portuguese oyster	Mollusca	Edible part	Market	Folch et al. 1957[1]	NPLC-QExactive-MS & MS/MS	CAEP	Lipid molecular species	Nutrition	Wang et al. 2020[13]
Placida dendritica	Dendritic sea slug	Mollusca	Whole organism	Wild	Bligh & Dyer, 1959[5]	HPLC-HLIC-Q-Exactive-ESI-MS & MS/MS	MGDG, DGDG, SQDG, SQMG, DGTS, MGTS, PC, LPC, PE, LPE, PG, LPG, PI, LPI, PS, PA, LPA, SM	Lipid molecular species	Ecology	Rey et al. 2020[11]
Ruditapes philippinarum	Manilla	Mollusca	Edible	Market	Matyash	HPLC-QqLIT &	PC, PE, PS,	Lipid	Nutrition	Liu et al.

			part		et al. 2008[7]	MS/MS	LPC, LPE	molecular species		2017[8]
	clam	Mollusca	Edible part	Market	Bligh & Dyer, 1959[5]	UHPLC-HILIC-ESI-FTMS	PC, LPC, PE, LPE	Lipid species	Nutrition	Losito et al. 2018[6]
Saxidomus purpurata	Clam	Mollusca	Edible part	Market	Matyash et al. 2008[7]	HPLC-QqLIT & MS/MS	PC, PE, PS, LPC, LPE	Lipid molecular species	Nutrition	Liu et al. 2017[8]
Tritonia tetraquetra	Large orange peel nudibranch	Mollusca	Epidermis, stomach and digestive gland	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PC, PE, PS, PI, CAEP	Lipid molecular species	Marine food webs	Imbs & Chernyshev, 2019[21]
Allopora steinegeri	Hydrocoral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PE, PC, PS, PI, CAEP	Lipid molecular species	Ecology	Imbs et al. 2019[22]
***Capnella* sp.**	Soft Coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	HPLC-HRMS-IT-TOF ESI & MS/MS	PC, PE, PS, PI	Lipid molecular species	Ecology	Imbs et al. 2015[23]
Gersemia fruticose	Hedge carnation coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PC, PE, PS, PI, CAEP	Lipid molecular species	Marine food webs	Imbs & Chernyshev, 2019[21]
Gersemia rubiformis	Red soft coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF-ESI & MS/MS	PE, PC, PS, PI	Lipid molecular species	Ecology	Imbs & Dang 2017[24]
Millepora dichotoma	Ramified fire coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PE, PC, PS, PI, CAEP	Lipid molecular species	Ecology	Imbs et al. 2019[22]
		Cnidaria	Branched fragments	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI	PE, PC, PS, PI, CAEP, MGDG, DGDG, SQDG, DGCC	Lipid molecular species	Ecology	Imbs et al. 2021[25]
Millepora platyphylla	Sheet fire coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PE, PC, PS, PI, CAEP	Lipid molecular species	Ecology	Imbs et al. 2019[22]
		Cnidaria	Branched fragments	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI	PE, PC, PS, PI, CAEP, MGDG, DGDG, SQDG, DGCC	Lipid molecular species	Ecology	Imbs et al. 2021[25]
***Palythoa* sp.**	Zoantharia	Cnidaria	Colonies	Wild	Folch et	LCMS-IT-TOF ESI	PE, PC, PS, PI,	Lipid	Ecology	Sikorskaya

					al. 1957[1]		CAEP, SQDG, MGDG, DGDG, DGCC	molecular species		2020[26]
Paragorgia arborea	Tree bubblegum coral	Cnidaria	Whole organism	Wild	Folch et al. 1957[1]	LCMS-IT-TOF-ESI & MS/MS	PE, PC, PI, PS, CAEP	Lipid molecular species	Ecology	Imbs & Velansky, 2021[27]
Pocillopora damicornis	Cauliflower coral	Cnidaria	Coral fragments	Wild	Matyash et al. 2008[7]	LCMS-Q-TOF-ESI	PC, PE, LPC, LPAF, TG, DG	Lipid species	Global change	Sogin et al. 2016[28]
Rhopilema esculentum	Japanese edible jellyfish	Cnidaria	Umbrella, oral arms and mouth stalk	Wild	$CHCl_3$/CH_3OH (1:1, *v/v*) containing BHT (0.05%)	UPLC-ESI-Q-TOF-ESI-MS & MS/MS	PE, LPE, PI, LPI, PS, PC, LPC, TG, CAEP, Cer	Lipid molecular species	Nutrition & Fed	Zhu et al. 2015[29]
Seriatopora caliendrum	Bush coral	Cnidaria	Coral fraction of the tip and stalk positions	Wild	Folch et al. 1957[1]	RP-HPLC-TQ-ESI-MS & MS/MS	PC, LPC	Lipid molecular species	Other: Toxicology	Tang et al. 2017[30]
		Cnidaria	Organism fraction	Wild	Folch et al. 1957[1]	RP-HPLC-TQ-ESI-MS & MS/MS	PC, LPC	Lipid molecular species	Ecology: environmental monitoring and assessment	Tang et al. 2018[31]
		Cnidaria	Organism fraction	Wild	Folch et al. 1957[1]	RP-HPLC-TQ-ESI-MS & MS/MS	PC, LPC	Lipid molecular species	Ecology: environmental monitoring and assessment	Tang et al. 2019[32]
Sinularia macropodia	Soft Coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	HPLC-HRMS-IT-TOF ESI & MS/MS	PC, PE, PS, PI	Lipid molecular species	Ecology	Imbs et al. 2015[23]
Sinularia siaesensis	Soft coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PE, PC, LPC, PS, PI, CAEP, MGDG, DGDG, SQDG	Lipid molecular species	Ecology	Sikorskaya & Imbs 2018[33]
***Sinularia* sp.**	Soft coral	Cnidaria	Colonies	Wild	Folch et al. 1957[1]	LCMS-IT-TOF ESI & MS/MS	PE, LPE, PC, LPC, PS, PI, CAEP, oxPE, MGDG, DGDG, SQDG	Lipid molecular species	Global change	Sikorskaya et al. 2020[34]

Asterias amurenis	Purple-orange star	Echinodermata	Edible part	Market	Folch et al. 1957[1]	NPLC/QExactive-MS & MS/MS	CAEP	Lipid molecular species	Nutrition	Wang et al. 2020[13]
Bohadschia marmorata	Sea cucumber	Echinodermata	Edible part	Market	Bligh & Dyer, 1959[5]	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC, LPE, LPS, LPI, CAEP	Lipid molecular species	Nutrition	Wang et al 2020[35]
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Cucumaria frondosa	Orange-footed Sea cucumber	Echinodermata	Edible part	Market	Bligh & Dyer, 1959[5]	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC, LPE, LPS, LPI, CAEP	Lipid molecular species	Nutrition	Wang et al 2020[35]
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Glyptocidaris crenularis	Sea urchin	Echinodermata	Gonad	Market	Matyash et al. 2008[7]	HPLC–Qtrap-QqLIT-ESI-MS & MS/MS	PC, LPC, PE, LPE, PS, PI	Lipid molecular species	Nutrition	Zhou et al. 2018[38]
Holothuria mexicana	Sea cucumber	Echinodermata	Edible part	Market	Bligh & Dyer, 1959[5]	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC, LPE, LPS, LPI, CAEP	Lipid molecular species	Nutrition	Wang et al 2020[35]
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Holothuria polli	White spot cucumber	Echinodermata	Edible part	Market	Bligh & Dyer, 1959[5]	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC, LPE, LPS, LPI, CAEP	Lipid molecular species	Nutrition	Wang et al 2020[35]
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Isostichopus fuscus	Sea cucumber	Echinodermata	Edible part	Market	Bligh & Dyer,	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC,	Lipid molecular	Nutrition	Wang et al 2020[35]

					1959[5]		LPE, LPS, LPI, CAEP	species		
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Parastichopus californicus	California sea cucumber	Echinodermata	Edible part	Market	Bligh & Dyer, 1959[5]	NPLC-Triple TOF-MS/MS	PC, PE, PS, PI, PA, PG, LPC, LPE, LPS, LPI, CAEP	Lipid molecular species	Nutrition	Wang et al 2020[35]
		Echinodermata	Edible part	Market	Svennerholm & Fredman, 1980[36]	HILIC-Q-Exactive-ESI-MS & MS/MS	GM	Lipid species	Nutrition; Bioprospection	Wang et al. 2021[37]
Strongylocentrotus intermedius	Sea urchin	Echinodermata	Gonad	Market	Matyash et al. 2008[7]	HPLC–Qtrap-QqLIT-ESI-MS & MS/MS	PC, LPC, PE, LPE, PS, PI	Lipid molecular species	Nutrition	Zhou et al. 2018[38]
		Echinodermata	Gonad	Wild	Bligh & Dyer, 1959[5]	RP-UPLC-Q-Exactive Plus-ESI-MS & MS/MS	Cer, CerP, CE, CL, DG, DGDG, dMePE, FFA, LdMePE, LPC, LPE, LPG, LPI, LPS, MG, MGDG, MGMG, PA, PAF, PC, PE, PG, phSM, PI, PS, So, SQDG, SQMG, TG	Lipid molecular species	Nutrition Bioprospection	Wang et al. 2021[39]
Strongylocentrotus nudus	Sea urchin	Echinodermata	Gonad	Market	Matyash et al. 2008[7]	HPLC–Qtrap-QqLIT-ESI-MS & MS/MS	PC, LPC, PE, LPE, PS, PI	Lipid molecular species	Nutrition	Zhou et al. 2018[38]
Carcinus maenas	European green crab	Arthropoda	Egg mass	Wild	Bligh & Dyer, 1959[5]	HILIC-LXQ-ESI-MS & MS/MS	PC, LPC, PE, LPE, SM, PI, CL	Lipid molecular species	Ecology	Rey et al. 2015[40]
Necora puber	Velvet swimming crab	Arthropoda	Egg mass	Wild	Bligh & Dyer, 1959[5]	HILIC-LXQ-ESI-MS & MS/MS	PC, LPC, PE, LPE, SM, PI, CL	Lipid molecular species	Ecology	Rey et al. 2015[40]
Parapaeneus longirostris	Pink	Arthropod	Edible	Market	Bligh &	UHPLC-HILIC-	PC, LPC, PE,	Lipid	Nutrition	Losito et al.

	shrimp	a	part		Dyer, 1959[5]	ESI-FTMS	LPE	species		2018[6]
Portunus trituberculatus	Swimming crab	Arthropoda	Muscular tissues of body, claws and legs	Aquaculture	Bligh & Dyer, 1959[5]	UPLC-HILIC-Q-Trap-ESI-MS & MS/MS	PC, PE, PI, PS	Lipid molecular species	Nutrition	Zhang et at. 2021[41]

Abbreviations: BHT – Butylated hydroxytoluene; CAEP – Ceramide aminoethylphosphonate; Car – Carnitine; CE – Cholesteryl ester; Cer – Ceramide; CerP – Ceramide phosphate; CH_2Cl_2 – Dichloromethane; $CHCl_3$ – Chloroform; CH_3OH – Methanol; Chol – Cholesterol; CL – Cardiolipin; CPE – Ceramide phosphoethanolamines; DG – Diacylglycerol; DGCC – Diacylglyceryl carboxyhydroxymethylcholine; DGDG – Digalactosyl diacylglycerol; DGMG – Digalactosyl monoacylglycerol; DGTS – Diacylglyceryl-N,N,N-trimethyl homoserine; dMePE – Dimethylphosphatidylethanolamine; FFA – Free fatty acids; GM – Ganglioside; Hex2Cer – Dihexosylceramide; HexCer – Hexosylceramide; LdMePE – Lysodimethylphosphatidylethanolamine; LPA – Lyso-phosphatidic acid; LPAF – Lyso-platelet activating factor; LPC – Lyso-phosphatidylcholine; LPE – Lyso-phosphatidylethanolamine; LPG – Lyso-phosphatidylglycerol; LPI – Lyso-phosphatidylinositol; LPnC – Lysophosphonocholine; LPS – Lyso-phosphatidylserine; MADAG – Monoalkyldiacylglycerol; MG – Monoacylglycerol; MGDG – Monogalactosyl diacylglycerol; MGMG – Monogalactosyl monoacylglycerol; MGTS – Monoacylglyceroltrimethylhomoserine; *N*-CH_3-CAEP – *N*-methyl ceramides aminoethylphosphonates; oxPE – Oxidized phosphatidylethanolamine; PA – Phosphatidic acid; PC – Phosphatidylcholine; PE – Phosphatidylethanolamine; PG – Phosphatidylglycerol; phSM – Phytosphingosine; PI – Phosphatidylinositol; PnC – Phosphonocholine; PnE – Phosphonoethanolamine; PS – Phosphatidylserine; SM – Sphingomyelin; So – Sphingosine; SQDG – Sulfolipid sulfoquinovosyl diacylglycerol; SQMG – Sulfoquinovosyl monoacylglycerol; ST – Steroid; TG – Triacylglycerol; WE – Wax esters.

References

1 J. Folch, M. Lees and G. H. S. Stanley, A simple method for the isolation and purification of total lipides from animal tissues, *Journal of Biological Chemistry*, 1957, **226**, 497–509.

2 V. G. Rybin, A. B. Imbs, D. A. Demidkova and E. V. Ermolenko, Identification of molecular species of monoalkyldiacylglycerol from the squid *Berryteuthis magister* using liquid chromatography–APCI high-resolution mass spectrometry, *Chemistry and Physics of Lipids*, 2017, **202**, 55–61.

3 A. Gilabert, P. Geraudie, J. Jaumot and C. Porte, Partial characterization of the lipidome of the cold-water scallop, *Chlamys islandica*, *Environ Sci Pollut Res*, 2020, **27**, 1475–1484.

4 C. Y. Chang and W.-X. Wang, A lipidomic approach to understand copper resilience in oyster *Crassostrea hongkongensis*, *Aquatic Toxicology*, 2018, **204**, 160–170.

5 E. G. Bligh and W. J. Dyer, A rapid method of total lipid extraction and purification, *Canadian Journal of Biochemistry and Physiology*, 1959, **37**, 911–917.

6 I. Losito, L. Facchini, R. Catucci, C. Calvano, T. Cataldi and F. Palmisano, Tracing the thermal history of seafood products through lysophospholipid analysis by Hydrophilic Interaction Liquid Chromatography–Electrospray Ionization Fourier Transform Mass Spectrometry, *Molecules*, 2018, **23**, 2212.

7 V. Matyash, G. Liebisch, T. V. Kurzchalia, A. Shevchenko and D. Schwudke, Lipid extraction by methyl-tert-butyl ether for high-throughput lipidomics, *Journal of Lipid Research*, 2008, **49**, 1137–1146.

8 Z.-Y. Liu, D.-Y. Zhou, Q. Zhao, F.-W. Yin, X.-P. Hu, L. Song, L. Qin, J.-R. Zhang, B.-W. Zhu and F. Shahidi, Characterization of glycerophospholipid molecular species in six species of edible clams by high-performance liquid chromatography-electrospray ionization-tandem mass spectrometry, *Food Chemistry*, 2017, **219**, 419–427.

9 A. B. Imbs and V. P. Grigorchuk, Lipidomic study of the influence of dietary fatty acids on structural lipids of cold-water nudibranch molluscs, *Sci Rep*, 2019, **9**, 20013.

10 F. Rey, E. da Costa, A. M. Campos, P. Cartaxana, E. Maciel, P. Domingues, M. R. M. Domingues, R. Calado and S. Cruz, Kleptoplasty does not promote major shifts in the lipidome of macroalgal chloroplasts sequestered by the sacoglossan sea slug *Elysia viridis*, *Scientific Reports*, 2017, **7**, 11502–11502.

11 F. Rey, T. Melo, P. Cartaxana, R. Calado, P. Domingues, S. Cruz and M. R. M. Domingues, Coping with starvation: contrasting lipidomic dynamics in the cells of two sacoglossan sea slugs incorporating stolen plastids from the same macroalga, *Integrative and Comparative Biology*, 2020, **60**, 43–56.

12 Y.-Y. Zhang, L. Qin, Y.-X. Liu, D.-Y. Zhou, X.-B. Xu, M. Du, B.-W. Zhu and M. Thornton, Evaluation of lipid profile in different tissues of Japanese abalone *Haliotis discus hannai* Ino with UPLC-ESI-Q-TOF-MS-based lipidomic study, *Food Chemistry*, 2018, **265**, 49–56.

13 R. Wang, Q. Chen, Y. Song, Y. Ding, P. Cong, J. Xu and C. Xue, Identification of ceramide 2-aminoethylphosphonate molecular species from different aquatic products by NPLC/Q-Exactive-MS, *Food Chemistry*, 2020, **304**, 125425.

14 Q. Tran, T. Le, M. Pham, T. Do, M. Vu, D. Nguyen, L. Bach, L. Bui and Q. Pham, Fatty acid, lipid classes and phospholipid molecular species composition of the marine clam *Meretrix lyrata* (Sowerby 1851) from Cua Lo Beach, Nghe an province, Vietnam, *Molecules*, 2019, **24**, 895.

15 F.-W. Yin, D.-Y. Zhou, Q. Zhao, Z.-Y. Liu, X.-P. Hu, Y.-F. Liu, L. Song, X. Zhou, L. Qin, B.-W. Zhu and F. Shahidi, Identification of glycerophospholipid molecular species of mussel (Mytilus

edulis) lipids by high-performance liquid chromatography-electrospray ionization-tandem mass spectrometry, *Food Chemistry*, 2016, **213**, 344–351.
16 L. Facchini, I. Losito, T. R. I. Cataldi and F. Palmisano, Ceramide lipids in alive and thermally stressed mussels: an investigation by hydrophilic interaction liquid chromatography-electrospray ionization Fourier transform mass spectrometry: Ceramide lipids in mussels: a HILIC-ESI-FTMS study, *J. Mass Spectrom.*, 2016, **51**, 768–781.
17 F. Rigano, A. Albergamo, D. Sciarrone, M. Beccaria, G. Purcaro and L. Mondello, Nano liquid chromatography directly coupled to electron ionization mass spectrometry for free fatty acid elucidation in mussel, *Anal. Chem.*, 2016, **88**, 4021–4028.
18 L. Facchini, I. Losito, T. R. I. Cataldi and F. Palmisano, Seasonal variations in the profile of main phospholipids in *Mytilus galloprovincialis* mussels: A study by hydrophilic interaction liquid chromatography-electrospray ionization Fourier transform mass spectrometry, *J Mass Spectrom*, 2018, **53**, 1–20.
19 I. Losito, L. Facchini, A. Valentini, T. R. I. Cataldi and F. Palmisano, Fatty acidomics: Evaluation of the effects of thermal treatments on commercial mussels through an extended characterization of their free fatty acids by liquid chromatography – Fourier transform mass spectrometry, *Food Chemistry*, 2018, **255**, 309–322.
20 P. Donato, G. Micalizzi, M. Oteri, F. Rigano, D. Sciarrone, P. Dugo and L. Mondello, Comprehensive lipid profiling in the Mediterranean mussel (*Mytilus galloprovincialis*) using hyphenated and multidimensional chromatography techniques coupled to mass spectrometry detection, *Anal Bioanal Chem*, 2018, **410**, 3297–3313.
21 A. B. Imbs and A. V. Chernyshev, Tracing of lipid markers of soft corals in a polar lipidome of the nudibranch mollusk *Tritonia tetraquetra* from the Sea of Okhotsk, *Polar Biol*, 2019, **42**, 245–256.
22 A. B. Imbs, L. P. T. Dang and K. B. Nguyen, Comparative lipidomic analysis of phospholipids of hydrocorals and corals from tropical and cold-water regions, *PLoS ONE*, 2019, **14**, e0215759.
23 A. B. Imbs, L. P. T. Dang, V. G. Rybin, N. T. Nguyen and L. Q. Pham, Distribution of very-long-chain fatty acids between molecular species of different phospholipid classes of two soft corals, *Biochem Anal Biochem*, 2015, **4**, 205, DOI:10.4172/2161-1009.1000205.
24 A. B. Imbs and L. T. P. Dang, The molecular species of phospholipids of the cold-water soft coral *Gersemia rubiformis* (Ehrenberg, 1834) (Alcyonacea, Nephtheidae), *Russ J Mar Biol*, 2017, **43**, 239–244.
25 A. B. Imbs, E. V. Ermolenko, V. P. Grigorchuk and L. T. P. Dang, Seasonal variation in the lipidome of two species of *Millepora* hydrocoralsfrom Vietnam coastal waters (the South China Sea), *Coral Reefs*, 2021, **40**, 719–734.
26 T. V. Sikorskaya, Investigation of the total lipidoma from a Zoantharia *Palythoa* sp., *Chem Nat Compd*, 2020, **56**, 44–49.
27 A. B. Imbs and P. V. Velansky, Lipidomic profiling reveals biosynthetic relationships between phospholipids and diacylglycerol ethers in the deep-sea soft coral *Paragorgia arborea*, *Sci Rep*, 2021, **11**, 21285.
28 E. M. Sogin, H. M. Putnam, P. E. Anderson and R. D. Gates, Metabolomic signatures of increases in temperature and ocean acidification from the reef-building coral, *Pocillopora damicornis*, *Metabolomics*, 2016, **12**, 71.
29 S. Zhu, M. Ye, J. Xu, C. Guo, H. Zheng, J. Hu, J. Chen, Y. Wang, S. Xu and X. Yan, Lipid profile in different parts of edible jellyfish *Rhopilema esculentum*, *J. Agric. Food Chem.*, 2015, **63**, 8283–8291.

30 C.-H. Tang, C.-Y. Lin, S.-H. Lee and W.-H. Wang, Membrane lipid profiles of coral responded to zinc oxide nanoparticle-induced perturbations on the cellular membrane, *Aquatic Toxicology*, 2017, **187**, 72–81.
31 C.-H. Tang, C.-Y. Lin, P.-P. Sun, S.-H. Lee and W.-H. Wang, Modeling the effects of Irgarol 1051 on coral using lipidomic methodology for environmental monitoring and assessment, *Science of The Total Environment*, 2018, **627**, 571–578.
32 C.-H. Tang, S.-H. Shi, C.-Y. Lin, H.-H. Li and W.-H. Wang, Using lipidomic methodology to characterize coral response to herbicide contamination and develop an early biomonitoring model, *Science of The Total Environment*, 2019, **648**, 1275–1283.
33 T. V. Sikorskaya and A. B. Imbs, Study of total lipidome of the *Sinularia siaesensis* soft coral, *Russ J Bioorg Chem*, 2018, **44**, 712–723.
34 T. V. Sikorskaya, E. V. Ermolenko and A. B. Imbs, Effect of experimental thermal stress on lipidomes of the soft coral *Sinularia* sp. and its symbiotic dinoflagellates, *Journal of Experimental Marine Biology and Ecology*, 2020, **524**, 151295.
35 X. Wang, P. Cong, Q. Chen, Z. Li, J. Xu and C. Xue, Characterizing the phospholipid composition of six edible sea cucumbers by NPLC-Triple TOF-MS/MS, *Journal of Food Composition and Analysis*, 2020, **94**, 103626.
36 L. Svennerholm and P. Fredman, A procedure for the quantitative isolation of brain gangliosides, *Biochimica et Biophysica Acta (BBA) - Lipids and Lipid Metabolism*, 1980, **617**, 97–109.
37 X. Wang, X. Wang, P. Cong, X. Zhang, H. Zhang, C. Xue and J. Xu, Characterizing gangliosides in six sea cucumber species by HILIC–ESI-MS/MS, *Food Chemistry*, 2021, **352**, 129379.
38 X. Zhou, D.-Y. Zhou, T. Lu, Z.-Y. Liu, Q. Zhao, Y.-X. Liu, X.-P. Hu, J.-H. Zhang and F. Shahidi, Characterization of lipids in three species of sea urchin, *Food Chemistry*, 2018, **241**, 97–103.
39 H. Wang, W. Zhao, B. Ding, Y. Zhang, X. Huang, X. Liu, R. Zuo, Y. Chang and J. Ding, Comparative lipidomics profiling of the sea urchin, *Strongylocentrotus intermedius*, *Comparative Biochemistry and Physiology Part D: Genomics and Proteomics*, 2021, **40**, 100900.
40 F. Rey, E. Alves, T. Melo, P. Domingues, H. Queiroga, R. Rosa, M. R. M. Domingues and R. Calado, Unravelling polar lipids dynamics during embryonic development of two sympatric brachyuran crabs (*Carcinus maenas* and *Necora puber*) using lipidomics, *Scientific Reports*, 2015, **5**, 14549.
41 Y. Zhang, M. Zhang, L. Dong, J. Chang, H. Wang and Q. Shen, Lipidomics screening of polyunsaturated phospholipid molecular species in crab (*Portunus trituberculatus*) muscular tissue: A nontarget approach by HILIC-MS, *Eur. J. Lipid Sci. Technol.*, 2021, 2100097.