



Ylenia Carotenuto, PhD

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Current position: Researcher

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Research interests

My research interests are on phytoplankton-zooplankton interactions, chemical ecology, molecular biology and Next Generation Sequencing. My activity focuses on the effects of algal infochemicals on prey-predator interactions and ecosystem functioning. I study the impact of diatom secondary metabolites (oxylipins), on grazing, reproduction, larval development and gene expression of copepods, and their role in copepod population dynamics at sea. My research activity involves measurements of copepod life-history parameters (i.e. ingestion rates, egg production and viability, larval survivorship), quantitative gene expression analysis (RT-qPCR) and transcriptome sequencing.

Education/Training/Professional experience

Institute and Location	Qualification	Year	Sector
Stazione Zoologica Anton Dohrn	Researcher	2010-now	Plankton ecology; diatom-copepod interaction
National Scientific Habilitation	Assistant Professor (II Level)	2014	Ecology (BIO 05/C1)
Göteborg University, Sven Lovén Centre for Marine Sciences, Tjärnö (Svezia)	Visitor scientist	2016 (1 week)	Experimental workshop
Göteborg University, Sven Lovén Centre for Marine Sciences, Kristineberg (Svezia)	Visitor scientist	2011 (1 week)	ASSEMBLE Transnational Access
Station Biologique de Roscoff, Roscoff (Francia)	Visitor scientist	2010 (1 week)	ASSEMBLE Transnational Access

Stazione Zoologica Anton Dohrn	Post-doc	2009-2010 (6 months)	Eco-physiology of diatom-copepod interaction
University of Bergen (Norway)	Visitor scientist	2008 (1 week) 2005 (2 months)	Mesocosm experiments on phytoplankton-copepod interactions
Oceanographic cruise on board of the vessel "URANIA"	Scientist	2005 (1 week)	<i>In-situ</i> experiments of copepod feeding and reproduction
Oceanographic cruise on board of the vessel "G. Dallaporta"	Scientist	2004 (1 week) 2006 (1 week)	<i>In-situ</i> experiments of copepod feeding and reproduction
Stazione Zoologica Anton Dohrn	Contract researcher	2003-2009	Eco-physiology of diatom-copepod interaction
Max Planck Institute for Limnology (Plön, Germany)	Post-doc fellowship	2002-2003	Freshwater diatoms-cladocerans interactions: feeding and reproduction
University of Messina (Italy)	PhD	1998-2002	PhD in Environmental Sciences: Marine Environment and Resources
University of Vigo (Spain)	Visitor PhD student	2001 (2 months)	Toxic algae-copepod interactions: reproduction
Stazione Zoologica Anton Dohrn	Training	1997-1998 (1 year)	Eco-physiology of diatom-copepod interaction
University 'Federico II' of Naples	Master degree	1997	Biological Sciences

Appointments and Awards

2004. Winner of MARS (European Marine Research Stations Network) Travel Award for Young Scientists.

2010. Award of the General Consulate of Germany in Naples, for acknowledging the effort in scientific cooperation between Germany and Italy in Marine Biology.

Student Supervision

Director of study of 2 Open University PhD student.

Internal Supervisor of 1 OU PhD student.

Supervisor of 2 non-UK MPhil students

Google Scholar h-index: 18

ISI Web Of Science h-index: 16

Author of 36 publications on ISI-journals and 1 Book chapter

List of publications of the last 10 years (2008-present):

Peer-reviewed

2018. Amato, A., and **Carotenuto, Y.** Planktonic calanoids embark into the 'omics' era. In: Trends in Copepod Studies - Distribution, Biology and Ecology, edited by M. Uttieri. New York: Nova Science Publishers, Inc. pp 287-314.
2016. Lauritano, C., Romano, G., Roncalli, V., Amoresano, A., Fontanarosa, C., Bastianini, M., Braga, F., **Carotenuto, Y.**, Ianora, A. New oxylipins produced at the end of a diatom bloom and their effects on copepod reproductive success and gene expression levels. *Harmful Algae*, 55: 221-229.
2015. Ianora, A., Bastianini, M., **Carotenuto, Y.**, Casotti, R., Roncalli, V., Miralto, A., Romano, G., Gerecht, A., Fontana, A., Turner, J.T. Non-volatile oxylipins can render some diatom blooms more toxic for copepod reproduction. *Harmful Algae*, 44: 1-7.
doi:10.1016/j.hal.2015.02.003
2015. Lauritano, C., **Carotenuto, Y.**, Vitiello, V., Buttino, I., Romano, G., Hwang, J-S., Ianora, A. Effects of the oxylipin-producing diatom *Skeletonema marinoi* on gene expression levels of the calanoid copepod *Calanus sinicus*. *Marine Genomics* 24: 89-94.
doi:10.1016/j.margen.2015.01.007
2015. Asai, S., Ianora, A., Lauritano, C., Lindeque, P.K., **Carotenuto, Y.**, High-quality RNA extraction from copepods for Next Generation Sequencing: A comparative study. *Marine Genomics*, 24: 115-118.
doi:10.1016/j.margen.2014.12.004
2014. **Carotenuto, Y.**, Dattolo, E., Lauritano, C., Pisano, F., Sanges, R., Miralto, A., Procaccini, G., and Ianora, A. Insights into the transcriptome of the marine copepod *Calanus helgolandicus* feeding on the oxylipin-producing diatom *Skeletonema marinoi*, *Harmful Algae*, 31: 153-162.
doi:10.1016/j.hal.2013.11.002
2014. Kâ S., **Carotenuto, Y.**, Romano, G., Hwang, J.S., Buttino, I., Ianora, A., Impact of the diatom-derived polyunsaturated aldehyde 2-trans,4-trans decadienal on the feeding, survivorship and reproductive success of the calanoid copepod *Temora stylifera*, *Marine Environmental Research*, 93: 31-37. doi:10.1016/j.marenvres.2013.07.009
2013. Lauritano, C., **Carotenuto, Y.**, Procaccini, G., Turner, J.T., Ianora, A., Changes in expression of stress genes in copepods feeding upon a non-brevetoxin producing strain of the dinoflagellate *Karenia brevis*. *Harmful Algae*, 28: 23-30 doi:10.1016/j.hal.2013.05.004
2013. Gerecht, A., **Carotenuto, Y.**, Ianora, A., Romano, G., Fontana, A., d'Ippolito, G., Jakobsen, H.H., Nejstgaard, J.C., Oxylipin production during a mesocosm bloom of *Skeletonema marinoi*. *Journal of Experimental Marine Biology and Ecology* 446: 159–165.

- doi:10.1016/j.jembe.2013.05.014.
2012. Lauritano C, **Carotenuto Y**, Procaccini G, Ianora A. Changes in the molecular response to the same toxic diatom diet among different *Calanus helgolandicus* populations. *Biologia Marina Mediterranea*, vol. 19, p. 16-19.
2012. Lauritano, C., **Carotenuto, Y.**, Miralto, A., Procaccini, G., Ianora, A., Copepod Population-Specific Response to a Toxic Diatom Diet. *PLoS ONE* 7(10): e47262.
doi:10.1371/journal.pone.0047262.
2012. **Carotenuto, Y.**, Esposito, F., Pisano, F., Lauritano, C., Perna, M., Miralto, A., Ianora, A. Multi-generation cultivation of the copepod *Calanus helgolandicus* in a re-circulating system. *Journal of Experimental Marine Biology and Ecology* 418-419, 46-58.
doi:10.1016/j.jembe.2012.03.014
2012. Turner, J. T., Roncalli, V., Ciminiello, P., Dell'Aversano, C., Fattorusso, E., Tartaglione, L., **Carotenuto, Y.**, Romano, R., Esposito, F., Miralto, A., Ianora, A. Biogeographic effects of the Gulf of Mexico red tide dinoflagellate *Karenia brevis* on Mediterranean copepods. *Harmful Algae*, 16: 63-73.
doi:10.1016/j.hal.2012.01.006
2011. Lauritano, C., Borra, M., **Carotenuto, Y.**, Biffali, E., Miralto, A., Procaccini, G. & Ianora, A. Molecular evidence of the toxic effects of diatom diets on gene expression patterns in copepods. *PLOS One* 6 (10), e26850.
doi:10.1371/journal.pone.0026850
2011. Lauritano, C., Borra, M., **Carotenuto, Y.**, Biffali, E., Miralto, A., Procaccini, G. & Ianora, A. First molecular evidence of diatom effects in the copepod *Calanus helgolandicus*. *Journal of Experimental Marine Biology and Ecology*, 404, 79-86.
doi:10.1016/j.jembe.2011.05.009.
2011. Ianora, A., Romano, G., **Carotenuto, Y.**, Esposito, F., Roncalli, V., Buttino, I. & Miralto, A. Impact of the diatom oxylipin 15S-HEPE on the reproductive success of the copepod *Temora stylifera*. *Hydrobiologia*, 666, 265-275. doi: 10.1007/s10750-010-0420-7.
2011. Barreiro, A., **Carotenuto, Y.**, Lamari, N., Esposito, F., D'Ippolito, G., Fontana, A., Romano, G., Ianora, A., Miralto, A. & Guisande, C. Diatom induction of reproductive failure in copepods: The effect of PUAs versus non volatile oxylipins. *Journal of Experimental Marine Biology and Ecology*, 401, 13-19. doi: 10.1016/j.jembe.2011.03.007.
2011. **Carotenuto, Y.**, Ianora, A. & Miralto, A. Maternal and neonate diatom diets impair development and sex differentiation in the copepod *Temora stylifera*. *Journal of*

- Experimental Marine Biology and Ecology, 396, 99-107.
doi:10.1016/j.jembe.2010.10.012.
2008. Suffrian, K., Simonelli, P., Nejstgaard, J. C., Putzeys, S., **Carotenuto, Y.** and Antia, A. N. Microzooplankton grazing and phytoplankton growth in marine mesocosms with increased CO₂ levels. Biogeosciences, 5: 1145-1156. doi:10.5194/bg-5-1145-2008.
2008. Buttino, I., De Rosa, G., **Carotenuto, Y.**, Mazzella, M., Ianora, A., Esposito, F., Vitiello, V., Quaglia, F., La Rotonda, M. I. and Miralto, A. Aldehyde-encapsulating liposomes impair marine grazer survivorship. The Journal of Experimental Biology, 211: 1426-1433. doi:10.1242/jeb.015859.
2008. Antia AN, Suffrian K, Holste L, Müller MN, Nejstgaard JC, Simonelli P, **Carotenuto Y**, Putzeys S. Dissolution of coccolithophorid calcite by microzooplankton and copepod grazing. Biogeosciences Discussions, vol. 5, p. 1-23.

List of other publications (1999-2007)

- Carotenuto, Y., Putzeys, S., Simonelli, P., Paulino, A., Meyerhöfer, M., Suffrian, K., Antia, A. and Nejstgaard, J. C. (2007) Copepod feeding and reproduction in relation to phytoplankton development during the PeECE III mesocosm experiment. Biogeosciences Discussions, 4: 3913-3936. doi:10.5194/bgd-4-3913-2007.
- Carotenuto, Y., Ianora, A., Di Pinto, M, Sarno, D, Miralto, A. 2006. Annual cycle of early developmental stage survival and recruitment in the copepods *Temora stylifera* and *Centropages typicus*. Marine Ecology Progress Series, 314: 227-238. doi:10.3354/meps314227
- Mazzocchi, M.G., Buffoni, G., Carotenuto, Y., Pasquali, S., Ribera d'Alcalà, M. 2006. Effects of food conditions on the development of the population of *Temora stylifera*: A modeling approach. Journal of Marine System, 62 (1): 71-84. doi:10.1016/j.jmarsys.2006.04.005
- Buttino, I., Carotenuto, Y., de Rosa, G., Mazzella, M., Ianora, A., Miralto, M. 2006. Giant liposomes as carriers of phytotoxins in copepods and their application in ecophysiological studies. Biologia Marina Mediterranea, 13 (2): 308-309
- Buttino, I., Carotenuto, Y., De Rosa, G., Ianora, A., Quaglia, F., La Rotonda, M.I., Miralto, A. 2006. Detection of fluorescent liposomes in the copepod gut using confocal laser scanning microscope. Cytometry Part A, 69 (5): 439-439. doi:10.1002/cyto.a
- Buttino, I., De Rosa, G., Carotenuto, Y., Ianora, A., Fontana, A., Quaglia, F., La Rotonda, M.I., Miralto, A. 2006. Giant liposomes as delivery system for ecophysiological

- studies in copepods. *Journal of Experimental Biology*, 209 (5): 801-809. doi:10.1242/jeb.02068
- Carotenuto, Y., Wichard, T., Pohnert, G., Lampert, W. 2005. Life history responses of *Daphnia pulex* to diets containing freshwater diatoms: effects of nutritional quality versus polyunsaturated aldehydes. *Limnology and Oceanography*, 50 (2): 449-454. doi:10.4319/lo.2005.50.2.0449
- Paffenhöfer, G. A., Ianora, A., Miralto, A., Turner, J. T., Kleppel, G. S., Ribera d'Alcalà, M., Casotti, R., Caldwell, G. S., Pohnert, G., Fontana, A., Muller-Navarra, D. C., Jonasdottir, S. H., Armbrust, V., Bamstedt, U., Ban, S., Bentley, M. G., Boersma, M., Bundy, M. H., Buttino, I., Calbet, A., Carlotti, F., Carotenuto, Y., d'Ippolito, G., Frost, B., Guisande, C., Lampert, W., Lee, H. W., Mazza, S., Mazzocchi, G. M., Nejstgaard, J. C., Poulet, S., Romano, G., Smetacek, V., Uye, S., Wakeham, S. G., Watson, S., Wichard, T. 2005. Colloquium on diatom-copepod interactions. *Marine Ecology Progress Series*, 286: 293-305. doi:10.3354/meps286293
- Carotenuto, Y. and Lampert, W. (2004). Ingestion and incorporation of freshwater diatoms by *Daphnia pulex*: do morphology and oxylipin production matter? *Journal of Plankton Research*, 26: 563-569.
- Ianora, A., Miralto, A., Poulet, S. A., Carotenuto, Y., Buttino, I., Romano, G., Casotti, R., Pohnert, G., Wichard, T., Colucci-D'Amato, L., Terrazzano, G. and Smetacek, V. (2004). Aldehyde suppression of copepod recruitment in blooms of a ubiquitous planktonic diatom. *Nature*, 429: 403-407.
- Ianora, A., Turner, J. T., Esposito, F., Carotenuto, Y., d'Ippolito, G., Romano, G., Fontana, A., Guisande, C. and Miralto, A. (2004). Copepod egg production and hatching success is reduced by maternal diets of a non-neurotoxic strain of the dinoflagellate *Alexandrium tamarense*. *Marine Ecology Progress Series*, 280: 199-210.
- Buttino, I., Ianora, A., Carotenuto, Y., Zupo, V. and Miralto, A. (2003). Use of the confocal laser scanning microscope in studies on the developmental biology of marine crustaceans. *Microscopy Research and Technique*, 60: 458-464.
- Carotenuto, Y., Ianora, A., Buttino, I., Romano, G. and Miralto, A. (2002). Is postembryonic development in the copepod *Temora stylifera* negatively affected by diatom diets? *Journal of Experimental Marine Ecology and Biology*, 276: 49-66.
- Guisande, C., Frangopulos, M., Carotenuto, Y., Maneiro, I., Riveiro, I. and Vergara, A. R. (2002). Fate of paralytic shellfish poisoning toxins ingested by the copepod *Acartia clausi*. *Marine Ecology Progress Series*, 240: 105-115.
- Turner, J. T., Ianora, A., Esposito, F., Carotenuto, Y. and Miralto, A. (2002). Zooplankton feeding ecology: does a diet of *Phaeocystis* support good copepod grazing, survival,

egg production and egg hatching success? *Journal of Plankton Research*, 24: 1185-1195.

Laabir, M., Buttino, I., Ianora, A., Kattner, G., Poulet, S. A., Romano, G., Carotenuto, Y. and Miralto, A. (2001). Effect of specific dinoflagellate and diatom diets on gamete ultrastructure and fatty acid profiles of the copepod *Temora stylifera*. *Marine Biology*, 138: 1241-1250.

Carotenuto Y. & Buttino I. (2001). Sviluppo e sopravvivenza degli stadi larvali di *Temora stylifera* (Copepoda: Calanoida) in due condizioni sperimentali di alimentazione. *Biologia Marina Mediterranea*, 8(1): 1-10.

Carotenuto, Y. (1999) Morphological analysis of larval stages of *Temora stylifera* (Copepoda, Calanoida) from the Mediterranean Sea. *Journal of Plankton Research*, 21: 1613-1632.