



# Guillem Salazar

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*I use computational tools to understand how marine microbial communities are shaped and respond to environmental change.*

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## Academic Information

- 2007 **Degree in Biological Sciences**, *University of Valencia*, Valencia, SPAIN.
- 2008 **MSc in Biodiversity: Conservation and Evolution**, *University of Valencia*, Valencia, SPAIN.
- 2019 **PhD. in Oceanography**, *Polytechnic University of Catalonia & Marine Sciences Institute (ICM - CSIC)*, Barcelona, SPAIN.
- current **Postdoc**, *Sunagawa Lab, ETH Zürich*, Zürich, SWITZERLAND.

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## Grants and Contracts

- 2007 **Introduction to Scientific Research Grant - Education and Science Ministry**, *University of Valencia and Cavanilles Institute for Biodiversity and Evolutionary Biology*, Valencia, SPAIN.
- 2008 **Research Technician - Geronimo Forteza Programme**, *University of Valencia and Cavanilles Institute for Biodiversity and Evolutionary Biology*, Valencia, SPAIN.
- 2011 **Grant for a stay at Dr. Fuhrman Lab**, *University of Southern California (USC)*, Los Angeles, CA, USA, Valencia, SPAIN.
- 2013 **JAЕ Predoc (Phd Grant/Contract)**, *Marine Sciences Institute (ICM), CSIC*, Barcelona, SPAIN.

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- 2014 **Research Technician Contract**, *Marine Sciences Institute (ICM), CSIC*, Barcelona, SPAIN.
- 2015 **Research Technician Contract**, *Marine Sciences Institute (ICM), CSIC*, Barcelona, SPAIN.

## --- Courses

- 2006 **II Scientific Workshop of ICBiBE**, *Cavanilles Institute for Biodiversity and Evolutionary Biology*, Valencia, SPAIN.
- 2007 **International Course on Ecological Modelling**, *University of Valencia and the Spanish Society for Limnology and the Spanish Society for Terrestrial Ecology*, Valencia, SPAIN.
- 2008 **Socrates Intensive Programme Mathematics and Biology**, *Université d'Orsay Paris XI y AgroParisTech*, Paris, FRANCE.
- 2009 **Famoso III Scientific Cruise (Barcelona - Barcelona, Spain)**.
- 2010 **Citowork Cruise (Barcelona - Barcelona, Spain)**.
- 2010 **Inter-calibration Scientific Cruise - Malaspina 2010 Expedition (Las Palmas de Gran Canaria, Spain - Cartagena, Spain)**.
- 2010 **Methods in Microbial Oceanography Course**, *Marine Sciences Institute (ICM), CSIC*, Barcelona, SPAIN.
- 2011 **Malaspina 2010 Scientific Cruise (Cadiz, Spain - Rio de Janeiro, Brazil)**.
- 2011 **Bioinformatics for metagenomics and environmental sequencing**, *MERG and University of Oslo, Department of Biology*, Oslo, NORWAY.
- 2012 **Tara Oceans Scientific Cruise (Bermudas - Açores, Portugal)**.

## --- Teaching

- 2013 **Practical applications to epidemiology**, *Valencia's School for Health Studies (EVES)*, Valencia, SPAIN.

2014 **Biostatistics for Doctors: practical applications**, *Valencia's School for Health Studies (EVES)*, Valencia, SPAIN.

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## Oral presentations in conferences

- 2009 **Constatación empírica de un modelo estocástico para predecir la extinción de especies en interacción**, *Salazar, G., et al.*, II Congreso Nacional de Biodiversidad.
- 2012 **Biogeografía y diversidad de procariotas diazotrofos marinos mediante técnicas moleculares y genómicas**, *Cornejo-Castillo, F.M., Salazar, G., Stal, L., Hingamp, P., Gasol, J.M., Acinas, S.G.*, IX Congreso de Microbiología del Medio Acuático.
- 2012 **Global beta-diversity patterns in deep-ocean bacterial communities**, *Salazar, G., Cornejo-Castillo, F.M., Acinas, S.G., Gasol, J.M.*, ASLO Aquatic Sciences Meeting.
- 2013 **Exploración de la diversidad microbiana en el océano profundo: primeros Resultados de la Expedición Malaspina 2010**, *Gasol, J.M., Salazar, G., Cornejo-Castillo, F.M., Pernice, M., Gomes, A., Massana, R., Moràn, X.G., Arrieta, T., Duarte, C., Acinas, S.G.*, IV Congreso de Biodiversidad.
- 2014 **Patrones de diversidad globales de procariotas y picoeucariotas en el océano fótico y afótico**, *Salazar G., Logares R., Cornejo-Castillo F.M., Sunagawa S., Bork P., Gasol J.M. and Acinas S.G.*, X Congreso de Microbiología del Medio Acuático.
- 2015 **A global ocean metagenomic survey reveals events of vertical connectivity in oceanic microbial communities**, *Salazar G., Cornejo-Castillo F.M., Logares R., Sunagawa S., Ludicone D., Lionel G., Stemmann L., Laxenaire R., Speich S., Gasol J.M., Acinas S.G.*, SAME 14.
- 2015 **Living on particles in the ocean surface and the bathypelagic: prokaryotic groups involved and phylogenetic conservation of the particle-association trait**, *Mestre M., Salazar G., Cornejo-Castillo F.M., Sala M.M., Acinas S.G., Gasol J.M.*, SAME 14.

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## Posters in conferences

- 2007 **El papel del canibalismo en copepodos dentro de una red trófica sencilla**, *Salazar, G., et al.*, XI Conferencia Española y I Encuentro Iberoamericano de Biometría.
- 2007 **Un modelo nulo para la conectancia de redes de interacción planta-animal**, *Salazar, G., et al.*, XI Conferencia Española y I Encuentro Iberoamericano de Biometría.

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- 2011 **Diversity patterns of cultured marine bacteria using different organic matter sources as compared to single amplified genomes**, *Salazar, G., Sarmiento, H., D'Óez-Vives, C., Ferrera, I., Gasol, J.M., and Acinas, S.G.*, SAME 12.
- 2013 **Exploración de la diversidad microbiana en en distintos contextos ecológicos dentro de la expedición TARA Oceans**, *Salazar, G., Logares, R., Cornejo-Castillo, FM., Ferrera, I., Sarmiento, H., Gasol, JM., Acinas, S.G.*, IV Congreso de Biodiversidad.

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## Publications

- 2020 **Biogeography of marine giant viruses reveals their interplay with eukaryotes and ecological functions**, *Hisashi Endo, Romain Blanc-Mathieu, Yanze Li, Guillem Salazar, Nicolas Henry, Karine Labadie, Colomban de Vargas, Matthew B. Sullivan, Chris Bowler, Patrick Wincker, Lee Karp-Boss, Shinichi Sunagawa, Hiroyuki Ogata*, *Nature Ecology & Evolution* 4 (12) 1639-1649.
- 2020 **Diversity and distribution of marine heterotrophic bacteria from a large culture collection**, *Isabel Sanz-Sáez, Guillem Salazar, Pablo Sánchez, Elena Lara, Marta Royo-Llonch, Elisabet L. Sà, Teresa Lucena, María J. Pujalte, Dolors Vaqué, Carlos M. Duarte, Josep M. Gasol, Carlos Pedrós-Alió, Olga Sánchez, Silvia G. Acinas*, *BMC Microbiology* 20 (1) .
- 2020 **Major imprint of surface plankton on deep ocean prokaryotic structure and activity**, *Clara Ruiz-González, Mireia Mestre, Marta Estrada, Marta Sebastián, Guillem Salazar, Susana Agustí, Enrique Moreno-Ostos, Isabel Reche, Xosé Antón Álvarez-Salgado, Xosé Anxelu G. Morán, Carlos M. Duarte, M. Montserrat Sala, Josep M. Gasol*, *Molecular Ecology* 29 (10) 1820-1838.
- 2020 **Disentangling the mechanisms shaping the surface ocean microbiota**, *Ramiro Logares, Ina M. Deutschmann, Pedro C. Junger, Caterina R. Giner, Anders K. Krabberød, Thomas S. B. Schmidt, Laura Rubinat-Ripoll, Mireia Mestre, Guillem Salazar, Clara Ruiz-González, Marta Sebastián, Colomban de Vargas, Silvia G. Acinas, Carlos M. Duarte, Josep M. Gasol, Ramon Massana*, *Microbiome* 8 (1) .
- 2019 **Scaling of species distribution explains the vast potential marine prokaryote diversity**, *Victor M. Eguíluz, Guillem Salazar, Juan Fernández-Gracia, John K. Pearman, Josep M. Gasol, Silvia G. Acinas, Shinichi Sunagawa, Xabier Irigoien, Carlos M. Duarte*, *Scientific Reports* 9 (1) .

- 2019 **Gene Expression Changes and Community Turnover Differentially Shape the Global Ocean Metatranscriptome**, Guillem Salazar, Lucas Paoli, Adriana Alberti, Jaime Huerta-Cepas, Hans-Joachim Ruscheweyh, Migue-langel Cuenca, Christopher M. Field, Luis Pedro Coelho, Corinne Cruaud, Stefan Engelen, Ann C. Gregory, Karine Labadie, Claudie Marec, Eric Pelletier, Marta Royo-Llonch, Simon Roux, Pablo Sánchez, Hideya Uehara, Ahmed A. Zayed, Georg Zeller, Margaux Carmichael, Céline Dimier, Joannie Ferland, Stefanie Kandels, Marc Picheral, Sergey Pisarev, Julie Poulain, Silvia G. Acinas, Marcel Babin, Peer Bork, Chris Bowler, Colomban de Vargas, Lionel Guidi, Pascal Hingamp, Daniele Iudicone, Lee Karp-Boss, Eric Karsenti, Hiroyuki Ogata, Stephane Pesant, Sabrina Speich, Matthew B. Sullivan, Patrick Wincker, Shinichi Sunagawa, Silvia G. Acinas, Marcel Babin, Peer Bork, Emmanuel Boss, Chris Bowler, Guy Cochrane, Colomban de Vargas, Michael Follows, Gabriel Gorsky, Nigel Grimsley, Lionel Guidi, Pascal Hingamp, Daniele Iudicone, Olivier Jaillon, Stefanie Kandels-Lewis, Lee Karp-Boss, Eric Karsenti, Fabrice Not, Hiroyuki Ogata, Stephane Pesant, Nicole Poulton, Jeroen Raes, Christian Sardet, Sabrina Speich, Lars Stemmann, Matthew B. Sullivan, Shinichi Sunagawa, Patrick Wincker, *Cell* 179 (5) 1068-1083.e21.
- 2019 **Global Trends in Marine Plankton Diversity across Kingdoms of Life**, Federico M. Ibarbalz, Nicolas Henry, Manoela C. Brandão, Séverine Martini, Greta Busseni, Hannah Byrne, Luis Pedro Coelho, Hisashi Endo, Josep M. Gasol, Ann C. Gregory, Frédéric Mahé, Janaina Rigonato, Marta Royo-Llonch, Guillem Salazar, Isabel Sanz-Sáez, Eleonora Scalco, Dodji Soviadan, Ahmed A. Zayed, Adriana Zingone, Karine Labadie, Joannie Ferland, Claudie Marec, Stefanie Kandels, Marc Picheral, Céline Dimier, Julie Poulain, Sergey Pisarev, Margaux Carmichael, Stéphane Pesant, Marcel Babin, Emmanuel Boss, Daniele Iudicone, Olivier Jaillon, Silvia G. Acinas, Hiroyuki Ogata, Eric Pelletier, Lars Stemmann, Matthew B. Sullivan, Shinichi Sunagawa, Laurent Bopp, Colomban de Vargas, Lee Karp-Boss, Patrick Wincker, Fabien Lombard, Chris Bowler, Lucie Zinger, Silvia G. Acinas, Marcel Babin, Peer Bork, Emmanuel Boss, Chris Bowler, Guy Cochrane, Colomban de Vargas, Mick Follows, Gabriel Gorsky, Nigel Grimsley, Lionel Guidi, Pascal Hingamp, Daniele Iudicone, Olivier Jaillon, Stefanie Kandels, Lee Karp-Boss, Eric Karsenti, Fabrice Not, Hiroyuki Ogata, Stéphane Pesant, Nicole Poulton, Jeroen Raes, Christian Sardet, Sabrina Speich, Lars Stemmann, Matthew B. Sullivan, Shinichi Sunagawa, Patrick Wincker, *Cell* 179 (5) 1084-1097.e21.
- 2019 **Consistent host and organ occupancy of phyllosphere bacteria in a community of wild herbaceous plant species**, Julien Massoni, Miriam Bortfeld-Miller, Ludwig Jardillier, Guillem Salazar, Shinichi Sunagawa, Julia A. Vorholt, *The ISME Journal* 14 (1) 245-258.

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- 2019 **Microbial abundance, activity and population genomic profiling with mOTUs2**, Alessio Milanese, Daniel R Mende, Lucas Paoli, Guillem Salazar, Hans-Joachim Ruscheweyh, Miguelangel Cuenca, Pascal Hingamp, Renato Alves, Paul I Costea, Luis Pedro Coelho, Thomas S. B. Schmidt, Alexandre Almeida, Alex L Mitchell, Robert D. Finn, Jaime Huerta-Cepas, Peer Bork, Georg Zeller, Shinichi Sunagawa, *Nature Communications* 10 (1) .
- 2018 **Large-scale ocean connectivity and planktonic body size**, Ernesto Vilarino, James R. Watson, Bror Jönsson, Josep M. Gasol, Guillem Salazar, Silvia G. Acinas, Marta Estrada, Ramón Massana, Ramiro Logares, Caterina R. Giner, Massimo C. Pernice, M. Pilar Olivar, Leire Citores, Jon Corell, Naiara Rodríguez-Ezpeleta, José Luis Acuña, Axayacatl Molina-Ramírez, J. Ignacio González-Gordillo, Andrés Cózar, Elisa Martí, José A. Cuesta, Susana Agustí, Eugenio Fraile-Nuez, Carlos M. Duarte, Xabier Irigoien, Guillem Chust, *Nature Communications* 9 (1) .
- 2017 **Unveiling the role and life strategies of viruses from the surface to the dark ocean**, Elena Lara, Dolors Vaqué, Elisabet Laia Sà, Julia A. Boras, Ana Gomes, Encarna Borrull, Cristina Díez-Vives, Eva Teira, Massimo C. Pernice, Francisca C. Garcia, Irene Forn, Yaiza M. Castillo, Aida Peiró, Guillem Salazar, Xosé Anxelu G. Morán, Ramon Massana, Teresa S. Catalá, Gian Marco Luna, Susana Agustí, Marta Estrada, Josep M. Gasol, Carlos M. Duarte, *Science Advances* 3 (9) e1602565.
- 2017 **Exploring Microdiversity in Novel *Kordia* sp. (Bacteroidetes) with Proteorhodopsin from the Tropical Indian Ocean via Single Amplified Genomes**, Marta Royo-Llonch, Isabel Ferrera, Francisco M. Cornejo-Castillo, Pablo Sánchez, Guillem Salazar, Ramunas Stepanauskas, José M. González, Michael E. Sieracki, Sabrina Speich, Lars Stemmann, Carlos Pedrós-Alió, Silvia G. Acinas, *Frontiers in Microbiology* 8 .
- 2017 **Marine microbial diversity**, Guillem Salazar, Shinichi Sunagawa, *Current Biology* 27 (11) R489-R494.
- 2016 **Cyanobacterial symbionts diverged in the late Cretaceous towards lineage-specific nitrogen fixation factories in single-celled phytoplankton**, Francisco M. Cornejo-Castillo, Ana M. Cabello, Guillem Salazar, Patricia Sánchez-Baracaldo, Gipsi Lima-Mendez, Pascal Hingamp, Adriana Alberti, Shinichi Sunagawa, Peer Bork, Colomban de Vargas, Jeroen Raes, Chris Bowler, Patrick Wincker, Jonathan P. Zehr, Josep M. Gasol, Ramon Massana, Silvia G. Acinas, *Nature Communications* 7 (1) .

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- 2015 **Weak Coherence in Abundance Patterns Between Bacterial Classes and Their Constituent OTUs Along a Regulated River**, Clara Ruiz-González, Guillem Salazar, Ramiro Logares, Lorenzo Proia, Josep M. Gasol, Sergi Sabater, *Frontiers in Microbiology* 6 .
- 2015 **Particle-association lifestyle is a phylogenetically conserved trait in bathypelagic prokaryotes**, Guillem Salazar, Francisco M. Cornejo-Castillo, Encarna Borrull, Cristina Díez-Vives, Elena Lara, Dolors Vaqué, Jesús M. Arrieta, Carlos M. Duarte, Josep M. Gasol, Silvia G. Acinas, *Molecular Ecology* 24 (22) 5692-5706.
- 2015 **Global diversity and biogeography of deep-sea pelagic prokaryotes**, Guillem Salazar, Francisco M Cornejo-Castillo, Verónica Benítez-Barrios, Eugenio Fraile-Nuez, X Antón Álvarez-Salgado, Carlos M Duarte, Josep M Gasol, Silvia G Acinas, *The ISME Journal* 10 (3) 596-608.
- 2015 **Ubiquitous healthy diatoms in the deep sea confirm deep carbon injection by the biological pump**, S. Agustí, J. I. González-Gordillo, D. Vaqué, M. Estrada, M. I. Cerezo, G. Salazar, J. M. Gasol, C. M. Duarte, *Nature Communications* 6 (1) .
- 2015 **Response of rare, common and abundant bacterioplankton to anthropogenic perturbations in a Mediterranean coastal site**, Federico Baltar, Joakim Palovaara, Maria Vila-Costa, Guillem Salazar, Eva Calvo, Carles Pelejero, Cèlia Marrasé, Josep M. Gasol, Jarone Pinhassi, *FEMS Microbiology Ecology* 91 (6) .
- 2015 **Determinants of community structure in the global plankton interactome**, G. Lima-Mendez, K. Faust, N. Henry, J. Decelle, S. Colin, F. Carcillo, S. Chaffron, J. C. Ignacio-Espinosa, S. Roux, F. Vincent, L. Bittner, Y. Darzi, J. Wang, S. Audic, L. Berline, G. Bontempi, A. M. Cabello, L. Coppola, F. M. Cornejo-Castillo, F. d'Ovidio, L. De Meester, I. Ferrera, M.-J. Garet-Delmas, L. Guidi, E. Lara, S. Pesant, M. Royo-Llonch, G. Salazar, P. Sanchez, M. Sebastian, C. Souffreau, C. Dimier, M. Picheral, S. Searson, S. Kandels-Lewis, G. Gorsky, F. Not, H. Ogata, S. Speich, L. Stemmann, J. Weissenbach, P. Wincker, S. G. Acinas, S. Sunagawa, P. Bork, M. B. Sullivan, E. Karsenti, C. Bowler, C. de Vargas, J. Raes, *NA NA, Science* 348 (6237) 1262073-1262073.

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- 2015 **Structure and function of the global ocean microbiome**, S. Sunagawa, L. P. Coelho, S. Chaffron, J. R. Kultima, K. Labadie, G. Salazar, B. Djahanschiri, G. Zeller, D. R. Mende, A. Alberti, F. M. Cornejo-Castillo, P. I. Costea, C. Cruaud, F. d'Ovidio, S. Engelen, I. Ferrera, J. M. Gasol, L. Guidi, F. Hildebrand, F. Kokoszka, C. Lepoivre, G. Lima-Mendez, J. Poulain, B. T. Poulos, M. Royo-Llonch, H. Sarmento, S. Vieira-Silva, C. Dimier, M. Picheral, S. Searson, S. Kandels-Lewis, C. Bowler, C. de Vargas, G. Gorsky, N. Grimsley, P. Hingamp, D. Iudicone, O. Jaillon, F. Not, H. Ogata, S. Pesant, S. Speich, L. Stemmann, M. B. Sullivan, J. Weissenbach, P. Wincker, E. Karsenti, J. Raes, S. G. Acinas, P. Bork, E. Boss, C. Bowler, M. Follows, L. Karp-Boss, U. Krzic, E. G. Reynaud, C. Sardet, M. Sieracki, D. Velayoudon, NA NA, *Science* 348 (6237) 1261359-1261359.
- 2014 **Validation of a new catalysed reporter deposition-fluorescence in situ hybridization probe for the accurate quantification of marine Bacteroidetes populations**, Silvia G. Acinas, Isabel Ferrera, Hugo Sarmento, Cristina Díez-Vives, Irene Forn, Clara Ruiz-González, Francisco M. Cornejo-Castillo, Guillem Salazar, Josep M. Gasol, *Environmental Microbiology* 17 (10) 3557-3569.
- 2013 **Marked seasonality of aerobic anoxygenic phototrophic bacteria in the coastal NW Mediterranean Sea as revealed by cell abundance, pigment concentration and pyrosequencing of pufM gene**, Isabel Ferrera, Carles M. Borrego, Guillem Salazar, Josep M. Gasol, *Environmental Microbiology* 16 (9) 2953-2965.
- 2013 **Metagenomic 16S rDNA Illumina tags are a powerful alternative to amplicon sequencing to explore diversity and structure of microbial communities**, Ramiro Logares, Shinichi Sunagawa, Guillem Salazar, Francisco M. Cornejo-Castillo, Isabel Ferrera, Hugo Sarmento, Pascal Hingamp, Hiroyuki Ogata, Colomban de Vargas, Gipsi Lima-Mendez, Jeroen Raes, Julie Poulain, Olivier Jaillon, Patrick Wincker, Stefanie Kandels-Lewis, Eric Karsenti, Peer Bork, Silvia G. Acinas, *Environmental Microbiology* 16 (9) 2659-2671.
- 2013 **Biogeography of the uncultured marine picoeukaryote MAST-4: temperature-driven distribution patterns**, Raquel Rodríguez-Martínez, Gabrielle Rocap, Guillem Salazar, Ramon Massana, *The ISME Journal* 7 (8) 1531-1543.
- 2011 **Temperature Adaptation Markedly Determines Evolution within the Genus *Saccharomyces***, Z. Salvadó, F. N. Arroyo-López, J. M. Guillamón, G. Salazar, A. Querol, E. Barrio, *Applied and Environmental Microbiology* 77 (7) 2292-2302.

- 2010 **Why are there so many kinds of planktonic consumers? The answer lies in the allometric diet breadth**, *Carmen Rojo, Guillem Salazar*, *Hydrobiologia* 653 (1) 91-102.
- 2008 **Factors controlling the colonial structure of *Pediastrum tetras* (Chlorophyceae)**, *Carmen Rojo, Matilde Segura, María A. Rodrigo, Guillem Salazar*, *Hydrobiologia* 617 (1) 143-155.
- 2008 **Nitrate uptake rates in freshwater plankton: the effect of food web structure**, *Carmen Rojo, María A. Rodrigo, Guillem Salazar, Miguel Álvarez-Cobelas*, *Marine and Freshwater Research* 59 (8) 717.