Joaquín Martínez Martínez, PhD
Senior Research Scientist
Bigelow Laboratory for Ocean Sciences
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EDUCATION

2002 – 2006   **PhD:** Molecular ecology of marine algal viruses. Advisor: Dr. William H. Wilson University of Plymouth and PML, UK. University of Bergen, Norway.

2001 – 2002   **MSc:** Molecular diversity of nitrogen-fixing microbes in the marine environment. Advisor: Dr. Michael Wyman. Univeristy of Stirling, UK.

1995 – 1999   **BSc**: Environmental Sciences. University of Almería. Spain.

1993 - 1997   **BSc:** Marine Sciences. University of Cádiz, Spain.

RESEARCH APPOINTMENTS

Jul 2013 – : Senior Research Scientist. Bigelow Laboratory for Ocean Sciences, Maine, USA.

Jul 2013 – : Research Associate, Colby College, Maine, USA

RESEARCH EXPERIENCE

Sep 2008 – Jun 2013: Postdoctoral Fellow. Bigelow Laboratory for Ocean Sciences, USA. Investigation of gene and carbon flow through trophic levels mediated by viral infection. Development of techniques for single virus and single cell genomics. Metagenomics of viral communities. Research advisor: Dr. W. H. Wilson.

Nov 2005 – Sep 2008: Postdoctoral Fellow. Royal Netherlands Institute for Sea Research, The Netherlands. Investigation of the ecological importance of virus infection for *Micromonas pusilla*. Study sites in the North Sea, Wadden Sea, English Channel and Western Mediterranean Sea. Research advisor: Dr. C. P.D. Brussaard.

Oct 2002 – Aug 2006: PhD Research Project. University of Plymouth, England, UK; and University of Bergen, Norway. Investigation into the role of nutrient availability in virus propagation. Study of community dynamics and virus gene expression in mesocosm samples. Advisors: Dr. W.H. Wilson and Prof. G. Bratbak.

Oct 2001 – Oct 2002: MSc Research Project. University of Stirling, Scotland, UK. Investigation of N_2-fixers' diversity in the Indian Ocean through PCR amplification, sequencing and phylogenetic analysis of *nifH* genes. Advisor: Dr. M. Wyman.

Dec 1995 – Jun 1997: Undergraduate Student Research Assistant, Ichthyology Dept. University of Cádiz, Spain. Field work sampling, assisting with fish and prey species identification, fish dissections, analysis of otoliths and scales. Advisor: Dr. José A. Hernando.

RESEARCH GRANTS (At Bigelow Laboratory)

Awarded completed

Gordon and Betty Moore Foundation. Phage, Virus and Virome Sequencing Initiative program. (Jan 2010)**:** Cost for sequencing one novel *Emiliania huxleyi*-specific virus genome and seven virus metagenomes from the water column at the Patagonian Shelf. PI: **Joaquín Martínez Martínez.** Co-I: William H. Wilson (Bigelow Laboratory).

Gordon and Betty Moore Foundation. Phage, Virus and Virome Sequencing Initiative program (Jan 2010)**:** Cost for sequencing eight virus metagenomes from a mesocosm study in Raunefjoerden, Norway. PI: Ruth-Anne Sandaa (Univ. Bergen, Norway). Co-I: **Joaquín Martínez Martínez**.

Gordon and Betty Moore Foundation (May 2012 – Jul 2015)**:** Carbon and gene flow mediated by virus life. PI: William H. Wilson. Co-Is: Stephen Archer, David Fields, **Joaquín Martínez Martínez** (Bigelow Laboratory).

C-DEBI (NSF-funded center) (Feb 2012 – Dec 2014)**:** Virus-host diversity and interactions in the Juan de Fuca Ridge flank deep biosphere. PI: **Joaquín Martínez Martínez**.

Joint Genome Institute. Cost for sequencing twelve deep biosphere single amplified viral genomes. PI: **Joaquín Martínez Martínez.**

NSF-BioOCE-EAGER (Aug 2013 – Aug 2016)**:** Persistent virus infections in marine phytoplankton. PI: **Joaquín Martínez Martínez**. Non-funded collaborator: William H. Wilson (SAHFOS, UK).

Gordon and Betty Moore Foundation (Jul 2014)**:** Viral carbon turnover. PI: **Joaquín Martínez Martínez**. Co-I: Xavier Mayali (LLNL, USA).

Awarded current

Joint Genome Institute-CSP (2015 – 2018): Seasonal variation in Antarctic microbial communities: ecology, stability and susceptibility to ecosystem change. PI: Ricardo Cavicchioli (UNSW, Australia). Five Co-Is including **Joaquín Martínez Martínez**. Sample processing and sequencing totalling 2 Tb Next-Generation Sequencing data.

NSF-IOS-EAGER (Sep 2015 – Sep 2018)**:** Viruses of the protozoan parasites *Perkinsus* spp.: isolation and characterization. PI: **Joaquín Martínez Martínez**. Co-I: José Antonio Fernández Robledo (Bigelow Laboratory).

Gordon and Betty Moore Foundation (Dec 2015 – Jun 2019)**:** Development of microbiological oceanographic and biogeochemical applications for Raman Microspectrometry and Atomic Force Microscopy. PI: Gordon Taylor (SBU, USA). Co-Is: Virginia Edgcomb (WHOI, USA), **Joaquín Martínez Martínez**.

Gordon and Betty Moore Foundation (Jun 2016 – May 2019)**:** Optimization of a Single Virus Genomics pipeline. PI: **Joaquín Martínez Martínez**. Co-I: Manuel Martínez García (Univ. Alicante, Spain).

NSF Antarctic (Aug 2017 – Jul 2020)**:** Viral control of microbial communities in Antarctic lakes: from satellite to giant viruses. PI: **Joaquín Martínez Martínez**. Non-funded collaborator: Ricardo Cavicchioli (UNSW, Australia).

TEACHING AND MENTORING EXPERIENCE

Lecturer undergraduate level:
a. Colby Semester at Bigelow (2017, 32 h): Biological Oceanography, and Biological Oceanography Lab (300-level). Bigelow Laboratory for Ocean Sciences.

b. JanPlan Program (2016, 32 h): Introduction to Biological Oceanography (100-level). Colby College.

c. JanPlan Program (2015, 32 h): Introduction to Biological Oceanography (100-level). Colby College.

Assistant Instructor:
a. Keller-BLOOM program for high school students (2009 – 2017). Annual 1-week hands-on science program. I teach the virus and bacteria component of this program. Bigelow Lab.

b. Biological oceanography field and analytical methods course (Sep – Dec 2012, 40 h). Colby College Semester at Bigelow Laboratory for Ocean Sciences.

c. Microbiology Laboratory (May 2002, 4 h). University of Stirling, UK.

Research Mentor/Supervisor:
a. Postdoctoral Researchers (n = 2):
   - Ananda Shankar Bhatacharjee (Nov 2016 –). Bigelow Laboratory.
   - Mariana Silvia Cretoiu (Jan 2018 –). Bigelow Laboratory.

b. Graduate Students, (n = 3):
   - M.S. Jan Finke (Feb – Oct 2008), Univ. Amsterdam and Royal NIOZ, The Netherlands.
   - M.S. Mathieu Lazare (Feb – Jul 2016), Univ. Toulon, France, and Bigelow Laboratory.
   - Ph. D. candidate Francisco Martínez Hernández (visiting graduate student, Jul – Oct 2017), Univ. Alicante, Spain.

c. Undergraduate students (n = 16):
   - Bigelow Laboratory, independent research experience internships and senior theses:
     2017: Ariel Petchel, Samantha Calderon; **2016:** Nate Matteson (current PhD candidate, Scripps Research Institute); **2015:** Andrew Goode (current PhD candidate, University of Maine), Madison Marra (current Master's of Education in Science, University of Washington.), Aaminah Aleem; **2014:** Lisa Allen; **2013**: Jonah Belk (current Masters in Genetics at Otago University in New Zealand); **2012:** Ellen Plane, Tyler Evers; **2010:** April Klein.
   - Royal NIOZ, The Netherlands, senior thesis:
     2006: Anita Stoker, Bart Kay; **2007**: Lisa Faber, Pim Steinbergen; **2008:** Rowan Tuinema.

d. High school students (n = 2): **2015 – 2016:** Brad Tibbetts (current undergraduate, Maine Maritime Academy); **2016:** Mallory Caron (current undergraduate, Bates College).

e. Research Personnel at Bigelow Laboratory (n = 4):
   - Anna Leavitt (Sep 2012 – Jul 2014, part-time Laboratory Technician).
   - Emily R. Lyczkowski (May – Sep 2015, part-time Research Associate).
   - Ilana Gilg (May 2014 – Feb 2017, Senior Research Associate).
   - Nicholas Marquis (Apr 2017 – Apr 2018, part-time Laboratory Technician).

PUBLICATIONS (corresponding author *)

25. Goode, A.G., Fields D.M., Archer S.D., **Martínez Martínez J.**[*] (2018) Physiological responses of *Oxyrrhis marina* to a diet of virally infected *Emiliania huxleyi*. PeerJ Preprints 6:e26851v1.

24. Dueker M.E., O'Mullan G., **Martínez Martínez J.**, Juhl A., Weathers K. (2017) Onshore Wind Speed Modulates Microbial Aerosols along an Urban Waterfront. Atmosphere 8:215

23. Dheilly N.M., Bolnick D., Bordenstein S., Brindley P.J., Figuères C., Holmes E.C., **Martínez Martínez J.**, Phillips A.J., Poulin R., Rosario K. (2017) Parasite Microbiome Project: Systematic Investigation of Microbiome Dynamics within and across Parasite-Host Interactions. mSystems 2:e00050-17.

22. Martínez-Hernández F., Fornas Ò., Lluesma Gomez M., Bolduc B., de la Cruz Peña M.J., **Martínez Martínez J**., Antón J., Gasol J.M., Rosselli R., Rodríguez-Valera F., Sullivan M.B., Acinas S.G., Martinez- Garcia M. (2017) Microdiversity matters: single virus genomics reveals hidden cosmopolitan and abundant viruses. Nature Comm. 8: 15892.

21. Wilson W.H., Gilg I.C., Moniruzzaman M., Field E.K., Koren S., LeCleir G.R., **Martínez Martínez J**., Poulton N.J., Swan B.K., Stepanauskas R., Wilhelm S.W. (2017). Genomic exploration of individual giant ocean viruses. ISME J. 11:1736-1745

20. Middleton J., **Martínez Martínez J,** Wilson W.H., Record N. (2017). Functional dynamics of *Emiliania huxleyi* virus-host interactions across multiple spatial scales. Limnol. Oceanogr. 62: 922-933.

19. Vermont A, **Martínez Martínez J**, Waller J, Gilg I, Leavitt A, Floge S, Archer S., Wilson W.H., Fields D. (2016) Virus infection of Emiliania huxleyi deters grazing by the copepod Acartia tonsa. J Plankton Res. 38(5):1194-1205. doi: 10.1093/plankt/fbw064.

18. Gilg I.C., Archer S.D., Floge S.A., Fields D.M., Vermont A.I., Leavitt A.H., Wilson W.H., **Martínez Martínez J**.[*] (2016). Differential gene expression is tied to photochemical efficiency reduction in virally infected Emiliania huxleyi. Mar. Ecol. Prog. Ser. 555:13-27.

17. Cold ER, Freyria NJ, **Martínez Martínez J**, Fernández Robledo JA. (2016). An Agar-Based Method for Plating Marine Protozoan Parasites of the Genus *Perkinsus*. PLoS ONE. 11(5):e0155015. doi: 10.1371/journal.pone.0155015

16. **Martínez Martínez J.**[*], Boere A., Gilg I., van Lent J.W.M., Witte H.J., van Bleijswijk J.D.L., Brussaard C.P.D.. (2015). New lipid envelope-containing dsDNA virus isolates infecting Micromonas pusilla reveal a separate phylogenetic group. Aquat. Microb. Ecol. DOI: 10.3354/ame01723.

15. Pagarete A., Kusonnmano K., Petersen K., Kimmance S.A., **Martínez Martínez J.**, Wilson W.H., Hehemann J.H., Allen M.J., Sandaa R.A. (2014). Dip in the gene pool: metagenomic survey of natural coccolithovirus communities. Virology.

14. Kimmance S.A., Allen M.J. Pagarete A., **Martínez Martínez J.**, Wilson W.H. (2014). Reduction in photosystem II efficiency during a virus-controlled *Emiliania huxleyi* bloom. Mar. Ecol. Prog. Ser. doi: 10.3354/meps10527

13. **Martínez Martínez J.**[*], Swan B.K., Wilson W.H. (2014). Marine viruses, a genetic reservoir revealed by targeted viromics. ISME Journal. .doi:10.1038/ismej.2013.214

12. Brandsma J., **Martínez Martínez J.**, Slagter H.A., Evans C. and Brussaard C.P.D. (2012). Microbial biogeography of the North Sea during summer. Biogeochemistry. doi: 10.1007/s10533-012-9783-3

11. **Martínez Martínez J**., Schroeder D.C., Wilson W.H. (2012). Dynamics and genotypic composition of Emiliania huxleyi and their co-occurring viruses during a coccolithophore bloom in the North Sea. FEMS Microbiol. Ecol.**:** DOI:10.1111/j.1574-6941.2012.01349.x.

10. **Martínez Martínez J.**, Poulton N.J., Stepanauskas R., Sieracki M.E. and Wilson W.H. (2011) Targeted sorting of single virus-infected phytoplankton cells. PLoS ONE 6(7): e22520. doi:10.1371/journal.pone.0022520.

9. Brussaard C.P.D and **Martínez Martínez J.** (2008). Algal bloom viruses. Plant Viruses 2:1-13

8. Jacobsen A., Larsen A., **Martínez Martínez J.,** Verity P.G., Frischer M.E. (2007). Susceptibility of colonies and colonial cells of *Phaeocystis pouchetii* (Haptophyta) to viral infection. Aquat. Microb. Ecol. 48:105-112

7. Whipple S.J., Patten B.C., Verity P.G., Frischer M.E., Long J.D., Nejstgaard J.C., Anderson J.T., Jacobsen A., Larsen A., **Martínez Martínez J.,** Borret S.R. (2007). Gaining integrated understanding of *Phaeocystis* spp. (Prymnesiophyceae) through model-driven laboratory and mesocosm studies. Biogeochemistry 83: 293-309

6. **Martínez Martínez J.,** Schroeder D.C., Larsen A., Bratbak G., Wilson W.H. (2007) Molecular dynamics of *Emiliania huxleyi* and co-occurring viruses during two separate mesocosm studies. Appl. Environ. Microbiol. 73 (2): 554-562

5. Allen M.J., **Martínez Martínez J.,** Schroeder D.C., Somerfield P.J., Wilson W.H. (2007) Use of microarrays to assess viral diversity: from genotype to phenotype. Environ. Microbiol. 9 (4): 971-982

4. **Martínez Martínez J.,** Norland S., Thingstad T.F., Schroeder D.C., Bratbak G., Wilson W.H., Larsen A. (2006) Variability in microbial population dynamics between similarly perturbed mesocosms. J. Plankton Res. 28 (8): 783-791

3. Nejstgaard J.C., Frischer M.E., Verity P.G., Anderson J.T., Jacobsen A., Zirbel M.J., Larsen A., **Martínez Martínez J.,** Sazhin A.F., Walters T., Bronk D.A., Whipple S.J., Borret S.R., Patten B.C., Long J.D. (2006) Plankton development and trophic transfer in seawater enclosures with nutrients and *Phaeocystis pouchetii* added. Mar. Ecol. Prog. Ser. 321: 99-121

2. Schroeder D.C., Biggi G.F., Hall M., Davy J., **Martínez Martínez J.,** Richardson A.J., Malin G., Wilson W.H. (2005) A genetic marker to separate *Emiliania huxleyi* (Prymnesiophyceae) morphotypes. J. Phycol. 41: 874-879

1. Bird C., **Martínez Martínez J.,** O'Donnell A.G., Wyman M**.** (2005) Spatial distribution and transcriptional activity of an uncultured clade of planktonic diazotrophic γ-proteobacteria in the Arabian Sea. Appl. Environ. Microbiol. 71 (4): 2079-2085

RECENT INVITED SCIENTIFIC PRESENTATIONS

Dec 4 2017, Southern Maine Community College, Portland, ME, USA. Marine viruses: Little guys, big effects.

May 8 – 12 2017, Continuum of persistence workshop, Cascais, Portugal. An unusual unicellular persistent viral infection in marine phytoplankton – is this normal?

Nov 16 2016, Colby College, Waterville, ME, USA. An ocean of viruses: What difference do they make?

Jun 4 2015, Bard College, NY, USA. Marine viruses: tiny giants with a lot to tell.

Dec 6 2013, University of Maine, ME, USA. Marine virus ecology, a source of research opportunity and discovery

Oct 21 2011, University of Connecticut, CT, USA. Novel approaches to investigate marine virus diversity and ecology.

FIELD WORK EXPERIENCE

- UNOLS Chief Scientist Training Cruise (co-chief scientist), R/V Wecoma W1106A (Jul 6-15th 2011), Oregon Coast.
- COPAS'08 Cruise R/V Revelle Knox22RR (Dec 4th 2008-Jan 2nd 2009), Patagonian Shelf.
- MICROVIR Cruise, R/V Pelagia 64PE217 (Jul 1st-31st 2007), North Sea.
- Five 1-month long mesocosm studies (2003 – 2008), Raunefjorden, Norway
- Shore-based diel study in Blanes, (Feb 19th-Mar 2nd 2007)) Mediterranean Sea, Spain
- 2-year long dock study at the Royal-NIOZ site (2006-2007), Wadden Sea, The Netherlands.
- Seven 1 – 3-day long cruises in the English Channel and the Gulf of Maine.

SYNERGISTIC ACTIVITIES

Educational

a. General public outreach science presentations, discussions, and hands-on activities through Bigelow Laboratory for Ocean Sciences' outreach programs (2009-2017).

Editorial

a. Reviewer*:*

- Scientific journals: Applied and Environmental Microbiology, Applied Microbiology and Biotechnology, Aquatic Microbial Ecology, Deep-Sea Research Part I, Ecology Letters, Environmental Microbiology, Evolution, Frontiers in Marine Science, Frontiers in Microbiology (Review editor, Editorial Board of Virology, since April 2017), ISME journal, Journal of Phycology, JoVE, Limnology and Oceanography, Microbial Ecology, Molecular Ecology Resources, PLoS Pathogens, Virology, Viruses.

- PhD theses: University of Kolkata (India), Universidad de Granada (Spain).

- Funding agencies: USA National Science Foundation (peer reviewer and panelist for Biological Oceanography program). UK Natural Environment Research Council (peer reviewer)

SCIENTIFIC AND PROFESSIONAL MEMBERSHIPS

Association for the Sciences of Limnology and Oceanography.

International Society for Microbial Ecology

LANGUAGES

Spanish Mother tongue; **English** Fluent