

CURRICULUM VITAE

Dr. JOZEF I. NISSIMOV

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General research interests:

Biological oceanography, marine primary production, the fate of carbon and the biological pump, phytoplankton physiology, marine virus ecology and diversity, host-virus interactions, molecular evolution, genetic expression, genome analysis and comparison, biogeography of marine viruses, polar microorganisms and their diversity, and coral health and disease.

Employment:

October 2013- current Postdoc Research Associate at the Department of Marine and Coastal Sciences, Rutgers University, USA (with Prof Kay Bidle).

March 2013 – June 2013: Research Assistant at the University of Oxford, Department of Plant Sciences (UK). Project: “CO₂ irrigation of commercially valuable algae and crops in desert conditions” (with Prof Liam Dolan and Tim Kruger).

October 2010- May 2012: Microbiology laboratory teaching assistant, Plymouth University, UK (with Dr Colin B Munn).

Guest Investigator:

February 2014- January 2015 Guest investigator at the Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, USA (with Dr Benjamin Van Mooy).

Education:

2009 – 2013 PhD “Ecological and functional biodiversity in a marine algal-virus system” - Plymouth Marine Laboratory & University of Nottingham, UK. Advisors: Dr Michael J. Allen, Dr Susan A. Kimmance & Prof Johnathan A. Napier.

2008 - 2009 MSc Marine Biology (awarded a Distinction) - University of Plymouth (UK) & Marine Biological Association of the United Kingdom. Advisors: Dr Susan A. Kimmance, Dr Colin B. Munn & Dr Michael J. Allen.

2005 - 2008 BSc (Hons) Marine Biology (awarded a First Class degree) - University of Plymouth (UK). Research project advisors: Dr Colin B. Munn (University of Plymouth) & Prof Eugene Rosenberg (Tel Aviv University, Israel).

List of publications:

Nissimov J.I. and Bidle K.D. ‘Stress, death, and the biological glue of sinking matter’ (2017) *Journal of Phycology*, 53 (2), 241–244.

Nissimov J.I., Pagarete A., Ma F. Cody S. Dunigan D.D. Kimmance S.A. Allen M.J. (2017) ‘Coccolithoviruses: a review of genomic thievery and metabolic thuggery’ *Viruses*, 9 (3), 52; doi:10.3390/v9030052.

Nissimov J.I., Napier J.A., Allen M.J. & Kimmance S.A. (2016) ‘Intragenus competition between coccolithoviruses: an insight on how a select few can come to dominate many’ *Environmental Microbiology*, 18(1), 133–145.

Nissimov J.I., Napier J.A., Kimmance S.A. & Allen M.J. (2014) 'Permanent draft genomes of four new coccolithoviruses: EhV-18, EhV-145, EhV-156 and EhV-164' *Marine Genomics*, 15: 7-8.

Nissimov J.I., Jones M., Napier J.A., Munn C.B., Kimmance S.A. & Allen M.J. (2013) 'Functional inferences of environmental coccolithovirus biodiversity' *ViroSin*, 28 (5): 291-302.

Sperling M., Piontek J., Gerdt G., Wichels A., Schunck H., Roy A-S, La Roche J., Gilbert J., **Nissimov J.I.**, Bittner L., Romac S., Riebesell U. & Engel A. (2013) 'Effect of elevated CO₂ on the dynamics of particle-attached and free-living bacterioplankton communities in an Arctic fjord' *Biogeosciences*, 10: 181-191.

Roy A-S, Gibbons S.M., Schunck H., Owens S., Caporaso J.G., Sperling M., **Nissimov J.I.**, Romac S., Bittner L., Riebesell U., LaRoche J. & Gilbert J.A. (2013) 'Ocean acidification shows negligible impacts on high-latitude bacterial community structure in coastal pelagic mesocosms' *Biogeosciences*, 10: 555-566.

Allen M.J., Tait K., Mühlhng M., Weynberg K., Bradley C., Trivedi U., Gharbi K., **Nissimov J.I.**, Mavromatis K., Jensen C.N., Grogan G. & Ali S.T. (2012) 'Genome Sequence of *Stenotrophomonas maltophilia* PML168, Which Displays Baeyer-Villiger Monooxygenase Activity' *Journal of Bacteriology*, 194 (17): 4753-4754.

Nissimov J.I., Worthy C.A., Rooks P., Napier J.A., Kimmance S.A., Henn M.R., Ogata H. & Allen M.J. (2012) 'Draft genome sequence of the coccolithovirus EhV-202' *Journal of Virology*, 86 (4): 2380-2381.

Nissimov J.I., Worthy C.A., Rooks P., Napier J.A., Kimmance S.A., Henn M.R., Ogata H. & Allen M.J. (2012) 'Draft genome sequence of four coccolithoviruses: EhV- 88, EhV- 201, EhV-207 and EhV-208' *Journal of Virology*, 86 (5): 2896-2897.

Nissimov J.I., Worthy C.A., Rooks P., Napier J.A., Kimmance S.A., Henn M.R., Ogata H. & Allen M.J. (2011) 'Draft genome sequence of the coccolithovirus EhV-84' *Standards in Genomic Sciences*, 5: 1-11

Nissimov J.I., Worthy C.A., Rooks P., Napier J.A., Kimmance S.A., Henn M.R., Ogata H. & Allen M.J. (2011) 'Draft Genome Sequence of the Coccolithovirus *Emiliania huxleyi* Virus 203' *Journal of Virology*, 85 (24): 13468–13469.

Nissimov J., Rosenberg E. & Munn C.B. (2009) 'Antimicrobial properties of resident coral mucus bacteria of *Oculina patagonica*' *FEMS Microbiology Letters*, 292: 210–215.

Competitive funding awards and successful grant applications:

2015 NSF Biological Oceanography grant in collaboration with MIT: "Collaborative Research: Elucidating algal host-virus dynamics in different nutrient regimes- mechanistic interactions and biogeochemical impact": **\$ 808,437**- current funding (divided between Rutgers and MIT).

2011 Natural Environmental Research Council (NERC) NBAF competitive award for the sequencing and annotation of four new algal viruses: **\$ 4061**.

2011 Travel and accommodation grant to attend and speak at the Aquatic Virus Workshop 6 (AVW6) in the Netherlands, provided by the Broad Institute in the US: **\$ 1000**.

2010 Travel and accommodation grant from the Society for General Microbiology (SGM) to attend their annual spring conference in Edinburgh, UK: **\$ 630**.

2010 Travel grant from the International Society for Microbial Ecology (ISME) to attend and present at the ISME13 conference in Seattle, US: **\$ 650**.

2010 Travel grant from the Challenger Society for Marine Science to attend and present at the ISME13 conference in Seattle, US: **\$ 400**.

2010 Travel grant from the SGM society to attend and present at the ISME13 in Seattle, US: **\$ 800**.

2010 Collaborative Gearing Scheme pilot study with the British Antarctic Survey (BAS) (CGS-66): a two-month pilot study in Antarctica was fully subsidised by BAS.

Journal Reviewer:

PlosOne, Environmental Microbiology, FEMS Microbiology, Journal of Plankton Research, Viruses, Virologica Sinica, Virus Genes, PNAS.

Teaching and student advisor:

2017-present Project advisor to Kevin Ma, an undergraduate student in the Bidle laboratory at Rutgers University. Subject of project: “Can marine viruses stimulate phytoplankton growth and survival under environmental stress?”

2016-2017 Project advisor to Lauren Palena, an undergraduate student in the Bidle laboratory at Rutgers University. Subject of project: “The impact of nitrogen and phosphorous limitation on host fitness and viral production in the *Emiliania huxleyi*- *Coccolithovirus* model system”.

2014-2015 Project advisor to Rebecca Gardella, an undergraduate student in the Bidle laboratory at Rutgers University. Subject of project: “Host resistance to virus infection and phenotypic diversity and infectivity of coccolithoviruses”.

2008-2012 University of Plymouth, School of Marine Science and Engineering, Graduate program in Marine Biology: Introduction into microbiological practice in the laboratory (demonstrations to first and second year undergraduate students in laboratory practical classes).

Outreach:

2015- present Development of short marine science videos and a mobile device app as an educational tool for children in the age of 12-18 (as part of a recent NSF funded grant and the national Next Generation Teaching Standards).

2014 Science judge for the annual Shore Bowl competition in New Jersey (a regional academic competition for high school students in NJ, NY, and PA that focuses on ocean-related topics).

2011-2013 Committee member of a discussion panel funded by the MOORE foundation for the development of the online science resource- VERVE Net (the Viral Ecology Research and Virtual Exchange Network, <https://www.protocols.io/g/verve-net>).

2011 Annual Lecture series at the University of Edinburgh, UK.

2011 Nissimov J. “With James Cook on the Atlantic Meridian” *Objects* 9 (27): 10-14 (article in a Bulgarian popular science magazine).

2010 Nissimov J. “Moments from the country of the midnight sun” *Objects* 11(17): 54-59 (article in a Bulgarian popular science magazine).

2009 Marine Biological Association of the UK open public science days.

Scientific cruise and fieldwork experience

2017 (May-June) Mesocosm experiment in the Norwegian fjord near Bergen, Norway. The projects aims were to investigate host-virus interactions (in particularly *E. huxleyi* and its viruses) at different nutrient and light regimes. Sampling included FlowCam imaging of aggregates, filtration for TEP, biomass collection from different depths for protein and nucleic acid extraction, flow cytometry, PIC/POC samples, filters for SEM imaging, dissolved nutrient analysis, scuba diving for sediment trap material, polar lipid analysis etc.; in addition to land based incubations.

2015 (April) Station ALOHA sampling science cruise. Sampling for marine virus fingerprinting off the coast of Hawaii on board the R/V Kilo Moana, in collaboration with the Centre for Microbial Oceanography: Research and Education (CMORE) at the University of Hawaii at Manoa.

2014 (July-August) Central California current system (CCS) diatom cruise, on board the R/V Melville. Duties included flow cytometry, deck-board Fe and Si enrichment incubation experiments, sample collection from CTDs and GeoFISH trace-metal clean water for DNA, RNA and Protein analysis of diatoms and associated viruses, and tangential flow filtration (TFF) for total viral community concentration for downstream analysis.

2011 (January-February): Collaborative project with the British Antarctic Survey (BAS) at Rothera research station, Adelaide Island, Antarctica (water filtration for virus and host DNA isolation).

2010 (October-November): Atlantic Meridional Transect 20 (AMT 20). A 46-day research cruise from Southampton (UK) to Punta Arenas (Chile) onboard the NERC ship RRS James Cook. Duties included water collection from CTD rosette bottles, filtration for virus and host DNA extraction, preservation of live samples in fixatives for flow cytometry, and the isolation of new algal viruses.

2010 (May-July): European Project on Ocean Acidification (EPOCA): Arctic Campaign. Mesocosm experiment in the Fjord near Ny-Alesund Research Station, Svalbard, conducted in collaboration with scientists from more than 30 countries. Duties included experimental setup, and sample filtration, biomass capture and eventually the isolation of bacterial and archaeal DNA and RNA for metagenomics and metatranscriptomics.

Skills

Laboratory- DNA, RNA and protein extraction and quantification, protein 3D modelling and structure prediction, total lipid extraction from cultures and analysis on LCQ mass-spectrometry, C14 enzyme specific activity assays, PCR, qPCR, polony method for detection and identification of viruses and their hosts, DGGE, microarrays, clone libraries, primer design, scanning electron microscopy, light microscopy, algal and bacterial culturing, chemostat operation, bacterial antibiotic assays, virus plaque assays, most probable number method for virus titre, flow cytometry (BD Accuri & FACSCAN), virus isolation from field samples, virus concentration by TFF and FeCl precipitation, virus purification by CsCl gradients and PEG precipitation, virus particle preparation for transmission electron microscopy, FIRE (Fluorescence Induction and Relaxation) analysis of algal cultures and field samples for photosynthetic activity and efficiency, PIC/POC/PON and DOC analysis of field and culture samples, FlowCam imaging of particles and cells, transparent exopolymeric particle (TEP) analysis and quantification.

Bioinformatics and software- WinMDI 2.9, ODV, BLAST, EMBI, IMG/ER, GOS, Artemis, ACT, DNA plotter, BioEdit, TreeView, DNA dotplot, MEGA6, SEQUIN, MAUVE, Pregap4, JalView, Image9, Spotfinder, Jmol, Strap, Swiss PDB viewer 4.1.0, Chimera (protein structure analysis tool), Xcalibur lipid analysis tool, etc.

Professional memberships:

2013-present The International Society for Viruses of Microorganisms (ISVM).

2012-present Association for the Sciences of Limnology and Oceanography (ASLO).

2010-2013 International Society for Microbial Ecology (ISME).

2009-2011 Society for General Microbiology (SGM).

2009-2011 Challenger Society for Marine Sciences.

2007 - 2009 Marine Biological Association of the United Kingdom.

Oral and poster presentations:

2016 Viruses of Microbes, Liverpool (UK). Poster presentation- “The impact of biochemical diversity on info-chemical production and viral demise of *Emiliana huxleyi*”

2016 Aquatic Virus Workshop (AVW8), Plymouth (UK). Oral presentation- “The impact of biochemical diversity on info-chemical production and viral demise of *Emiliana huxleyi*”

2015 Association for the Sciences of Limnology and Oceanography (ASLO), Granada, Spain. Oral presentation: “The impact of biochemical diversity on infochemical production and viral demise of *Emiliana huxleyi*”.

2013 Aquatic Virus Workshop (AVW7), St. Petersburg, Florida. Poster presentation.

2013 DMCS, Rutgers University seminar series: “Ecological and functional biodiversity in a marine-algal-virus system”.

2013 Association for the Sciences of Limnology and Oceanography (ASLO), New Orleans. Oral presentation: “Protein fold differences in the coccolithovirus-encoded serine palmitoyltransferase and its possible implications for the demise of *Emiliana huxleyi*.”

2011 University of Nottingham, annual postgraduate symposium. Poster presentation: “The genetic diversity of Coccolithoviruses and their biogeography”.

2011 British Antarctic Survey, 10th Antarctic Funding Initiative Workshop. Oral presentation: “The genetic diversity of Coccolithoviruses and their biogeography”.

2011 Aquatic Virus Workshop (AVW6), Netherlands. Oral presentation - “Coccolithovirus genomes: same, same but different”.

2010 SGM spring conference in Edinburgh, UK. Poster presentation: “Host-virus dynamics within the *Emiliana huxleyi* system: the effects of host fitness, phosphate availability and virus strain variability”.

2010 International Symposium on Microbial Ecology 13, Seattle. Oral presentation: “Ecological and functional biodiversity in a marine algal virus system”.

Other professional training:

2012 EU-US Training in Marine Bioinformatics (Bremen, Germany).

2011 Mesocosms in Aquatic Ecology: use, problems and potentials (MESOAQUA PhD course, Kiel, Germany).

2009 Introduction to Bioinformatics (Edinburgh University, UK).

2009 Environment Yes (Bio-entrepreneur course and competition, Oxford, UK).

Languages:

English (fluent), Bulgarian (mother tongue), Hebrew (as fluent as mother tongue), Russian (elementary).

References:

Prof. Kay D. Bidle (bidle@marine.rutgers.edu), Rutgers University, USA

Dr. Michael J. Allen (mija@pml.ac.uk), Plymouth Marine Laboratory, UK

Dr. Benjamin Van Mooy (bvanmooy@whoi.edu), Woods Hole Oceanographic Institution, USA

Dr. Mick Follows (mick@mit.edu), Massachusetts Institute of Technology, USA