

curriculum vitae - Orly Levitan

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RESEARCH INTERESTS

Photosynthesis; Cellular carbon and nitrogen metabolism; Cellular and retrograde signaling; The role of microorganisms in biogeochemical cycles; Carbon concentration mechanisms in photoautotrophs; Nitrogen fixation; Evolutionary processes in microorganisms; Redox control in biological systems; Renewable energy and biofuels.

EDUCATION

- 2005- 2010:** **Ph.D., Aquatic and Molecular Ecology**, The Mina and Everard Goodman Faculty of Life Sciences at Bar-Ilan University, Ramat Gan, Israel. *magna com laude*
- 2004-2005:** **M.Sc., Environmental and Plant Biology (direct track to M.Sc.)** The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University, Ramat Gan, Israel.
- 2001-2004:** **B.Sc., Biology**, The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University, Ramat Gan, Israel. *summa com laude*

ACADEMIC EMPLOYMENT AND TEACHING EXPERIENCE

- 2015-present** **Assistant Research Professor**, Environmental Biophysics and Molecular Ecology Laboratory, & Department of Plant Biology and Pathology, Rutgers University
- 2010-2015** **Post-doctoral Associate**, Environmental Biophysics and Molecular Ecology Laboratory, Rutgers University
- 2004-2010** **Teaching Assistant**, the Mina and Everard Faculty of Life Sciences at Bar-Ilan University: Biochemistry -200 level, Introduction to Ecology, and The Global Importance of Algae
- 2002-2003** **Program Supervisor**, outreach aimed at teaching gifted young scientists plant and environmental sciences

AWARDS AND DISTINCTIONS

- 2009** Rector's award for excellence of Ph.D. students, Bar Ilan University's (second time)
- 2008** Best student scientific paper award, The Israeli Association of Aquatic Sciences
- 2007** Wolf Foundation award for Ph.D. students
- 2006** Rector's award for excellence of Ph.D. students, Bar Ilan University's

FELLOWSHIPS AND SCHOLARSHIPS

- 2008-2010** Eshkol Scholarship for excellent Ph.D. students, given by the Israeli Ministry of Sciences
- 2008** Rieger Foundation-Jewish national fund program for Ph.D. students - fellowship for Environmental Studies
- 2008** DAAD (The German Academic Exchange Service) scholarship for two months research at the Alfred Wegener Institute (AWI), Bremerhaven, Germany
- 2005 - 2010** The Dean's Excellence Scholarship: The Mina and Everard Goodman Faculty of Life Sciences at Bar-Ilan University (renewed each year)
- 2005 - 2008** The University's President Scholarship for doctoral studies, Bar Ilan University

- 2006 - 2007** The Israeli Ministry of Sciences one-year scholarship for women in science
2005 The Rieger Foundation-Jewish national fund program for M.Sc. students - fellowship for Environmental Studies

OTHER PROFESSIONAL AND SERVICE ACTIVITIES

- 2006-present** **Peer reviewer for:** Proceedings of the National Academy of Sciences, Marine Ecology Progress Series, Federation of European Microbiological Societies, Deep Sea Research- part 1, Limnology and Oceanography, Global Change Biology, Geobiology, European Journal of Phycology, Science, Aquatic Microbial Ecology, Phycologia, Trends in Biotechnology, Marine Drugs, European journal of Phycology, National Science Foundation, European Research Council, PeerJ, New Phytologist, Journal of phycology
- 2007-present** **Mentoring and instructing undergraduates and graduate students** at Bar Ilan University and Rutgers University.
- 2006-2010** **Volunteered worked to support student with learning challenges from underrepresented communities.**
- 2002-2003** **Volunteered in promoting awareness and environmental conservation** in Israeli Universities.

FUNDING

“Environmental signals in a marine diatom”; NSF, EAGER ward #1558128; Co-PI (Funded Jan 13 2016, MCB)

PATENTS

Falkowski, P.G., Dinamarca, J., **Levitan, O.** U.S. provisional Application Serial No. 61/894,197, Overexpression of Dgat2D gene in *Phaeodactylum tricorutum* (pending)

PEER REVIEWED PAPERS

Manuscripts *in review*

Dinamarca, J., **Levitan, O.**, Kumaraswamy, K.G., Lun D.S., Falkowski P.G. The influence of over-expressing of DGAT2D on the carbon flow in *Phaeodactylum tricorutum*. *In revision*, Journal of phycology

2015

Dutkiewicz, S., Morris, J.J., Follows, M.J., Scott, J., **Levitan, O.**, Dyhrman, S.T., Berman-Frank, I. 2015 Impact of ocean acidification on the structure of future phytoplankton communities. *Nature Climate Change* **5.11**:1002-1006

Levitan, O., Dinamarca, J., Zelzion, E., Gorbunov, M.Y., Falkowski, P.G. 2015 An RNAi knock-down of nitrate reductase enhances lipid production in the diatom *Phaeodactylum tricorutum*. *The Plant Journal* 84(5):963-973

Levitan, O., Dinamarca, J., Zelzion, E., Lun, D.S., L.T. Guerra, Kim, M.K., Van Mooy, B., Kim, J., , Bhattacharya, D., Falkowski, P.G. 2015 Remodeling of intermediate metabolism in the diatom, *Phaeodactylum tricorutum*, under nitrogen starvation. *Proc. Natl. acad. Sci. U.S.A* **112(2)**:412-7

2014

Levitan, O., Dinamarca, J., Hochman, G., Falkowski, P.G. 2014 Diatoms: the fossil fuels of the future. *Trends in Biotechnology*. **32(3)**: 117-124

Spungin, D., Berman-Frank, I., **Levitan, O.** 2014 Trichodesmium’s strategies to alleviate P-limitation in the future acidified oceans. *Environmental Microbiology* **16(6)**:1935-1947

- Marie-Mathilde Perrineau, M.M., Zelzion, E., Gross, J., Price, D., Boyd, J., **Levitan, O.**, Bhattacharya, D. 2014 Using natural selection to unlock the adaptive potential of microalgal genomes. *PLoS ONE* **9(3)**: e92533
- 2013**
- Guerra, T., **Levitan, O.**, Frada, M.J., Suns, J.S., Falkowski P.G., Dismukes, C.G. 2013 Regulatory branch points affecting protein and lipid biosynthesis in the diatom *Phaeodactylum tricornutum*. *Journal of Biomass and Bioenergy*. **59**:306-315
- 2011**
- Sharon, Y., **Levitan, O.**, Spungin, D., Berman-Frank, I., Beer, S. 2011. Photoacclimation of the seagrass *Halophila stipulacea* to the dim irradiance at its 48-meter depth limit. *Limnology and Oceanography* **56(1)**: 357-362
- 2010**
- Levitan, O.**, Brown, C.M., Sudhaus, S., Campbell, D., LaRoche, J., and Berman-Frank, I. 2010. Regulation of nitrogen metabolism in the marine diazotroph *Trichodesmium* IMS101 under varying temperatures and atmospheric CO₂ concentrations. *Environmental Microbiology* **12(7)**: 1899-1912
- Kranz, S.A., **Levitan, O.**, Richter, K-U., Prášil, O., I. Berman-Frank I. Rost, B. 2010. Combined effects of pCO₂ and light on the N₂ fixing cyanobacteria *Trichodesmium* IMS101: Physiological responses. *Plant Physiology* **154**: 334-345
- Levitan, O.**, Kranz, S.A., Spungin, D., Prášil, O., Rost, B., Berman-Frank, I. 2010. The combined effects of pCO₂ and light on the N₂ fixing cyanobacterium *Trichodesmium* IMS101: A mechanistic view. *Plant Physiology* **154**: 346-356
- Levitan, O.**, Sudhaus, S., LaRoche, J., Berman-Frank, I. The influence of varying pCO₂ and temperature on gene expression of carbon and nitrogen pathways in *Trichodesmium* IMS101. *PLoS ONE* **5(12)**: e15104
- 2009**
- Suggett, D.J., Stambler, N., Prášil O, Kolber, Z., Quigg, A., Vázquez-Dominguez E., Zohary, T., Berman T., Iluz D., **Levitan, O.**, Lawson, T., Meeder, E., Bar-Zeev, E., Medova, H., Berman-Frank, I. 2009. Nutrient control of oceanic microbial growth during spring in the Gulf of Aqaba. *Aquatic Microbial Ecology* **56**: 227-239
- Ionescu, D., Oren A., **Levitan, O.**, Hindiyeh, H., Malkawis, H., Berman-Frank, I. 2009. The cyanobacterial community of the Zerka Ma'in hot springs, Jordan: morphological and molecular diversity and nitrogen fixation. *Algological Studies* **130**: 109-124
- 2008**
- Küpper, H., Seibert, S., Šetlík, I., Prášil, O., Šetlikova, E., Strittmatter, M., **Levitan, O.**, Lohscheider, J., Adamska, I., Berman-Frank, I. 2008. Iron limitation in the marine cyanobacterium *Trichodesmium* reveals new insights into regulation of photosynthesis for nitrogen fixation. *New Phytologist* **179**: 784-798
- 2007**
- Levitan, O.**, Rosenberg, G., Šetlík I., Šetlikova E., Gtigel, J., Klepetar, J., Prášil, O., Berman-Frank, I. 2007. Elevated CO₂ enhances nitrogen fixation and growth in the marine cyanobacterium *Trichodesmium*. *Global Change Biology* **13**: 1-8
- Berman-Frank, I., Rosenberg, G., **Levitan, O.**, Haramaty, L., Mari X. 2007. Coupling between autocatalytic cell death and transparent exopolymeric particle production in the marine cyanobacterium *Trichodesmium*. *Environmental Microbiology* **9**: 1415-1422

ORAL PRESENTATIONS IN CONFERENCES

- 2016** The Phycological Society of America Annual meeting, Cleveland, Ohio, USA . *Remodeling Intermediate Metabolism to Enhance Lipid Production in Phaeodactylum tricornutum.*
- 2016** The East Regional Photosynthesis Conference, Woods Hole, Massachusetts, USA. *Improving The Quantum Requirements For Lipid Production in the Diatom Phaeodactylum tricornutum.*
- 2015** Molecular Life of Diatoms, Seattle, Washington, USA. *The Role of Nitrate Reductase in Remodeling Intermediate Metabolism in Phaeodactylum Tricornutum"*
- 2014** Gordon Research Seminar - Photosynthesis, Vermont, USA. *The Intelligent Design of Algal Biofuels*
- 2014** Algal Biomass Summit, Sand Diego, California, USA. *The Intelligent Design of Algal Biofuels*
- 2014** Illumina Next-Generation Sequencing Symposium – Rutgers, New Jersey, USA. *Applied Genomics: Diatom Genomics and Applications to Biofuels.*
- 2013** Israel Sustainable Energy Society Annual Meeting, The Technion, Haifa, Israel, and The Annual Meeting of the Israeli Society of Science and Environment, The Faculty for Agriculture, Rehovot, Israel. *Using diatoms as a platform for renewable energy.*
- 2012** SD-Cab fuel and food symposium. San Diego, California, USA. *Crop protection in the diatom Phaeodactylum tricornutum.*
- 2010** The Israel-French Mini Symposium. Haifa, Israel, and The Israeli Association for Aquatic Sciences. Eilat, Israel. *The diazotrophic cyanobacterium Trichodesmium in the future ocean.*
- 2009** Advancing Marine Science conference. Eilat, Israel. *The combined influence of ocean acidification and nutrient enrichment on diazotrophic and phototrophic communities of the Gulf of Aqaba.*
- 2006** ASLO (Association for the Sciences of Limnology and COceanography) conference, Victoria, British Columbia, Canada. *The influence of elevated atmospheric pCO_2 on N_2 fixation and photosynthesis in the marine cyanobacterium Trichodesmium IMS101.*

INVITED TALKS AND SEMINARS

- 2016** Middle Atlantic Regional Meeting of the American Chemical Society, Riverdale, NY, USA. *Fuels of the Future - Diatoms as a Platform for Renewable Energy*
- 2014** The Rutgers Center for Computational and Integrative Biology (CCIB), Camden, USA. *Intermediate metabolism in the diatom Phaeodactylum tricornutum.*
- 2014** Baruch College, The City University of New York (CUNY), New York, USA. *Intermediate metabolism in the diatom Phaeodactylum tricornutum.*
- 2014** Israel Oceanographic & Limnological Research, The Yigal Allon Kinneret limnological Laboratory, Israel. *Carbon, Nitrogen, the Ocean, and Biofuels.*
- 2013** Environmental Geology & Geochemistry Seminar (EGGS), Department of Geosciences, Princeton University. *Using molecular tools to make Phaeodactylum tricornutum a platform for future renewable energy.*
- 2007** A colloquium talk given at the Alfred Wegener Institute (AWI), Bremerhaven, Germany. *The influence of global changes on the marine cyanobacterium Trichodesmium IMS101.*