

***curriculum vitae* - Orly Levitan**

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**RESEARCH INTERESTS**

Evolution of plastids, thylakoids, and metabolic pathways; Signaling in marine microorganisms (structure, function, and evolution); Structure-function mechanisms in Phytoplankton, Retrograde signaling; Photosynthesis and photoacclimation; The role of microorganisms in biogeochemical cycles; Carbon concentration mechanisms in photoautotrophs; Nitrogen fixation; Cell Biology; Cellular carbon and nitrogen metabolism; Redox control in biological systems; Structural Biology; 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 Marine and Coastal Sciences & Department of Plant Biology (2015-2016)
- 2010-2015** **Post-doctoral Associate**, Environmental Biophysics and Molecular Ecology Laboratory, Department of Marine and Coastal Sciences, 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**

- 2017-** **Co-Chair for the 2018 East Regional Photosynthetic Conference (ERPC).**
- 2012-present** **Reviewer for funding agencies:** National Science Foundation, and European Research Council.
- 2006-present** **Peer reviewer for journals:** Science, 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, Aquatic Microbial Ecology, Phycologia, Trends in Biotechnology, Marine Drugs, European Journal of Phycology, PeerJ, New Phytologist, and Journal of phycology, PLoS ONE, PeerJ, Philosophical Transactions B, Plant Physiology.
- 2007-present** **Mentoring and instructing undergraduates and graduate students** at Bar Ilan University and Rutgers University.
- 2006-2010** **Supporting students with learning challenges from underrepresented communities** (Volunteered)

**2002-2003 Promoting awareness and environmental conservation** in Israeli Universities (Volunteered).

### **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.**, Overexpression of Dgat2D gene in *Phaeodactylum tricornutum* (pending)

### **PEER REVIEWED PUBLICATIONS**

1. Dinamarca, J., **Levitan, O.**, Kumaraswamy, K.G., Lun D.S., Falkowski P.G. Overexpression of a diacylglycerol acyltransferase gene in *Phaeodactylum tricornutum* directs carbon towards lipid biosynthesis. 2017 *Journal of Phycology*, **53.2**:405-414.
2. 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
3. **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 tricornutum*. *The Plant Journal* 84(5):963-973
4. **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 tricornutum*, under nitrogen starvation. *Proc. Natl. acad. Sci. U.S.A* **112(2)**:412-7
5. **Levitan, O.**, Dinamarca, J., Hochman, G., Falkowski, P.G. 2014 Diatoms: the fossil fuels of the future. *Trends in Biotechnology*. **32(3)**: 117-124
6. 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
7. 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
8. 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
9. 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
10. **Levitan, O.**, Brown, CM., 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 CO<sub>2</sub> concentrations. *Environmental Microbiology* **12(7)**: 1899-1912
11. Kranz, S.A., **Levitan, O.**, Richter, K-U., Prášil, O., I. Berman-Frank I. Rost, B. 2010. Combined effects of pCO<sub>2</sub> and light on the N<sub>2</sub> fixing cyanobacteria *Trichodesmium* IMS101: Physiological responses. *Plant Physiology* **154**: 334-345

12. **Levitan, O.**, Kranz, SA., Spungin, D., Prášil, O., Rost, B., Berman-Frank, I. 2010. The combined effects of pCO<sub>2</sub> and light on the N<sub>2</sub> fixing cyanobacterium *Trichodesmium* IMS101: A mechanistic view. *Plant Physiology* **154**: 346-356
13. **Levitan, O.**, Sudhaus, S., LaRoche, J., Berman-Frank, I. The influence of varying pCO<sub>2</sub> and temperature on gene expression of carbon and nitrogen pathways in *Trichodesmium* IMS101. *PLoS ONE* **5(12)**: e15104
14. Suggett, DJ, 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
15. 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
16. Küpper, H., Seibert, S., Šetlík, I., Prášil, O., Šetlíková, 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
17. **Levitan, O.**, Rosenberg, G., Šetlík I., Šetlíková E., Gtigel, J., Klepetar, J., Prášil, O., Berman-Frank, I. 2007. Elevated CO<sub>2</sub> enhances nitrogen fixation and growth in the marine cyanobacterium *Trichodesmium*. *Global Change Biology* **13**: 1-8
18. 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

#### **INVITED TALKS AND SEMINARS**

- Microbiology at Rutgers University: 2-17 Symposium. *Elucidating retrograde signal transduction in the diatom Phaeodactylum tricorutum*. (2017)
- Mount Allison University, Faculty of Science seminar, Sackville, New Brunswick, Canada. Elucidating retrograde signal transduction in the diatom *Phaeodactylum tricorutum*. (2016)
- CUNY Queens College, Physics department seminar, NY. Improving The Quantum Requirements For Lipid Production in the Diatom *Phaeodactylum tricorutum*. (2016)
- Middle Atlantic Regional Meeting of the American Chemical Society, Riverdale, NY, USA. Fuels of the Future - Diatoms as a Platform for Renewable Energy (2016)
- The Rutgers Center for Computational and Integrative Biology (CCIB), Camden, USA. Intermediate metabolism in the diatom *Phaeodactylum tricorutum*. (2014)
- Baruch College, The City University of New York (CUNY), New York, USA. Intermediate metabolism in the diatom *Phaeodactylum tricorutum*. (2014)
- Israel Oceanographic & Limnological Research, The Yigal Allon Kinneret limnological Laboratory, Israel. Carbon, Nitrogen, the Ocean, and Biofuels. (2014)
- Environmental Geology & Geochemistry Seminar (EGGS), Department of Geosciences, Princeton University. Using molecular tools to make *Phaeodactylum tricorutum* a platform for future renewable energy. (2013)
- A colloquium talk given at the Alfred Wegener Institute (AWI), Bremerhaven, Germany. The influence of global changes on the marine cyanobacterium *Trichodesmium* IMS101. (2007)

## **CONTRIBUTED ORAL PRESENTATIONS IN CONFERENCES**

- The East Regional Photosynthesis Conference, Woods Hole, Massachusetts, USA. *From light to biomass – a study of photoacclimation and retrograde signal transduction mechanisms in diatoms.* (2017)
- The 24<sup>th</sup> International Diatom Symposium, Quebec city, Canada. *Elucidating retrograde signal transduction in the diatom Phaeodactylum tricornutum.* (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.* (2016)
- Molecular Life of Diatoms, Seattle, Washington, USA. *The Role of Nitrate Reductase in Remodeling Intermediate Metabolism in Phaeodactylum Tricornutum"* (2015)
- 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.* (2013)
- SD-Cab fuel and food symposium. San Diego, California, USA. *Crop protection in the diatom Phaeodactylum tricornutum.* (2012)
- The Israel-French Mini Symposium. Haifa, Israel, and The Israeli Association for Aquatic Sciences. Eilat, Israel. *The diazotrophic cyanobacterium Trichodesmium in the future ocean.* (2010)
- 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.* (2009)
- ASLO (Association for the Sciences of Limnology and COceanography) conference, Victoria, British Columbia, Canada. *The influence of elevated atmospheric pCO<sub>2</sub> on N<sub>2</sub> fixation and photosynthesis in the marine cyanobacterium Trichodesmium IMS101.* (2006)