

# Curriculum Vitae

**Personal Data:** Edo Bar-Zeev

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## Education:

**B.Sc (2001-2005),** Mina & Everard Goodman Faculty of Life Sciences, Bar Ilan University, Ramat Gan, 52900, Israel.

**M.Sc (2006-2008),** Bar Ilan University, Mina & Everard Goodman Faculty of Life Sciences, Israel.

**Ph.D (2009-2012),** Bar Ilan University, Mina & Everard Goodman Faculty of Life Sciences, Israel.

Supervisors: Prof. Tom Berman, Kinneret Limnological Lab, IOLR, Israel  
Prof. Ilana Berman-Frank, Bar-Ilan University, Israel

**Post-Doctoral (2012<sub>Jan</sub>-2012<sub>Nov</sub>),** Bar Ilan University, Mina & Everard Goodman Faculty of Life Sciences, Israel.

Host: Prof. Ilana Berman-Frank, Bar-Ilan University, Israel  
Prof. Kay Bidle, Rutgers University, USA

**Post-Doctoral (2012<sub>Dec</sub>-2015),** Department of Chemical and Environmental Engineering, Yale University, USA

Host: Prof. Menachem Elimelech, Yale University, USA

**Senior Lecturer (2015-current),** Department of Environmental Hydrology & Microbiology, Zuckerberg Institute for Water Research, Ben Gurion University.

**Research interests:** Applied and environmental microbiology, Biofilm and Biofouling.

## Awards and Fellowships:

Date	Award	Value (NIS)
2007	Prof. Y. Cohen Memorial Prize for a distinguished M.Sc thesis	1,500
2008	"Presidential Scholarship", Ph.D, Bar-Ilan University (for four years)	346,000
2008	"Excellence Scholarship", Ph.D, The Mina and Everard Goodman Faculty of Life Sciences. Bar-Ilan University (for four years)	
2011	Lindau Scholarship to attend the 61 <sup>st</sup> Lindau Nobel Laureate Meeting (Germany)	6,000
2011	The RIEGER Foundation - Fellowship	20,000
2012	BARD - Fellowship, Post Doc (USA)	360,000

## Publications [Impact factor (IF), Ranking (R in sub-criteria), Paper citations (PC)]

1. Dikla Man-Aharonovich, Nurit Kress, **Edo Bar Zeev**, Ilana Berman-Frank and Oded Béjà (2007). Molecular ecology of *nifH* genes and transcripts in the Eastern Mediterranean Sea. *Environmental Microbiology* 9: 2354–2363. (Q1; IF-6.2; R-10/133-Microbiology; PC-60)
2. **Edo Bar Zeev**, Tali Yogev, Dikla Man-Aharonovich, Nurit Kress, Barak Herut, Oded Be'ja` and Ilana Berman-Frank (2008). Seasonal dynamics of the endosymbiotic, nitrogen-fixing cyanobacterium *Richelia intracellularis* in the Eastern Mediterranean Sea. *ISME*: 1–13. (Q1; IF-9.3; R-5/133- Microbiology; PC-38)
3. **Edo Bar-Zeev**, Ilana Berman-Frank, Boris Liberman, Eyal Rahav, Uta Passow, Tom Berman (2009). Transparent exopolymer particles: important agents for organic fouling and biofilm formation in desalination and water treatment plants. *Desalination and Water Treatment* 3: 136-142. (Q2; IF-1.17; R-71/187-Water science & technology; PC-60)
4. David J. Suggett, Noga Stambler, Ondrej Prásil, Zbigniew Kolber, Antonietta Quigg, Evaristo Vázquez-Domínguez, Tamar Zohary, Tom Berman, David Iluz, Orly Levitan, Tracy Lawson, Efrat Meeder, Boaz Lazar, **Edo Bar-Zeev**, Hana Medova, Ilana Berman-Frank (2009). Nitrogen and phosphorus limitation of oceanic microbial growth during spring in the Gulf of Aqaba. *Aquatic Microbial Ecology* 56: 227-239. (Q2; IF-1.967; R-56/186-Aquatic sciences; PC-15)
5. **Edo Bar-Zeev**, Ilana Berman-Frank, Noga Stambler, Evaristo Vázquez Domínguez, Tamar Zohary, Elisa Capuzzo, Efrat Meeder, David J. Suggett, David Iluz, Gal Dishon, Tom Berman (2009). Transparent exopolymer particles (TEP) link phytoplankton and bacterial production in the Gulf of Aqaba. *Aquatic Microbial Ecology* 56: 217-225. (Q2; IF-1.967; R-56/186-Aquatic sciences; PC-20)

6. Tali Yogev, Eyal Rahav, **Edo Bar-Zeev**, Dikla Aharonovich, Nurit Kress, Oded Be'ja`, Margaret Mulholland, Barak Herut, Ilana Berman-Frank (2011). Is dinitrogen fixation significant in the Levantine basin, East Mediterranean Sea? *Environmental Microbiology*. 1:3 854-971. (Q1; IF-6.2; R-10/133-Microbiology; PC-30)
7. **Edo Bar-Zeev**, Eyal Rahav, Tali Yogev, Gal Dishon, Barak Herut, Nurit Kress, Tom Berman, and Ilana Berman-Frank (2011). Transparent exopolymer particles (TEP) dynamics in the Eastern Mediterranean Sea. *MEPS*. 431: 107-118. (Q1; IF-2.64; R-13/186-Aquatic sciences; PC-18)
8. Gal Dishon<sup>S</sup>, Eyal Rahav, **Edo Bar-Zeev**, David Iluz (2012). Optical habitats of ultra-phytoplankton groups in the Gulf of Eilat (Aquba), Northern Red Sea. *International Journal of Remote Sensing*. 1-23. (Q1; IF-1.6; R-51/259- Earth & planetary sciences; PC-8)
9. Natalia Belkin, **Edo Bar-Zeev**, Tom Berman, and Ilana Berman-Frank (2012). Two innovative devices for depth sampling in granular filtration systems. *Desalination*. 286: 115-119. (Q1; IF-3.75; R-7/187- Water sciences & technology; PC-5)
10. **Edo Bar-Zeev**, Natalia Belkin, Boris Liberman, Tom Berman, Ilana Berman-Frank (2012). Rapid sand filtration pretreatment for SWRO: microbial maturation dynamics and filtration efficiency of organic matter. *Desalination*. 286: 120-130. (Q1; IF-3.75; R-7/187- Water sciences & technology; PC-19)
11. **Edo bar-Zeev**, Olga Girshevitz, Ilana Berman-Frank and Tom Berman (2012). Revised paradigm for aquatic biofilm formation: facilitation by microgel transparent exopolymer particles. *PNAS*. 109: 9119-9124. (Q1; IF-9.67; R-3/109-Multidisciplinary sciences; PC-47)
12. **Edo Bar-Zeev**, Natalia Belkin, Tom Berman and Ilana Berman-Frank (2013). Biofloculation: chemical free pre-treatment technology for the desalination industry. *Water Research*. 47: 3093-3102. (Q1; IF-5.3; R-3/187- Water sciences & technology; PC-4)
13. Rahav Eyal, Herut Barak, Stambler Noga, **Bar-Zeev Edo**, Mulholland Margaret and Berman-Frank Ilana (2013). Uncoupling between dinitrogen fixation and primary productivity in the Eastern Mediterranean Sea. *Journal of Geophysical Research: Biogeosciences*, 118, 195-202. (Q1; IF-3.43; R-5/113- Oceanography; PC-15)
14. Eyal Rahav, **Edo Bar-Zeev**, Sarah Ohayion, Hila Elifantz, Natalia Belkin, Barak Herut, Margaret M. Mulholland and Ilana Berman-Frank (2013). Dinitrogen fixation in aphotic oxygenated marine environments. *Frontiers in Microbiology*. 4: 227. (Q1; IF-3.99; R-15\133-Microbiology; PC-7)
15. **Edo Bar-Zeev**, Itamar Avishay, Kay D Bidle and Ilana Berman-Frank (2013). Programmed cell death in the marine cyanobacterium *Trichodesmium* mediates carbon and nitrogen export. *ISME*. 1-9. (Q1; IF-9.3; R-5/133- Microbiology; PC-11)

16. **Edo Bar-Zeev** and Menachem Elimelech (2014). Reverse osmosis biofilm dispersal by osmotic back-flushing: cleaning via substratum perforation. *Environmental Science & Technology Letters* 1 (2):162–166. (Q1; IF-New journal; PC-8)
17. **Edo Bar-Zeev**, Katherine R. Zodrow, Sarah E. Kwan, and Menachem Elimelech (2014). The importance of microscopic characterization of membrane biofilms in an unconfined environment. *Desalination* 348: 8–15. (Q1; IF-3.75; R-7/187-Water sciences & technology; PC-4)
18. Moshe Ben-Sasson, Xinglin Lu, **Edo Bar-Zeev**, Katherine R. Zodrow, Qi Genggeng, Emmanuel P. Giannelis, and Menachem Elimelech (2014). In situ formation of silver nanoparticles on thin-film composite reverse osmosis membranes for biofouling mitigation. *Water Research* 62: 260-270 (Q1; IF-5.3, R-3/187-Water sciences & technology; PC-31)
19. Katherine R. Zodrow, **Edo Bar-Zeev**, Michael J. Giannetto and Menachem Elimelech (2014). Biofouling and microbial communities in membrane distillation and reverse osmosis. *Environmental Science & Technology* 48: 13155–13164. (Q1; IF-5.3; R-16/384-Chemistry; PC-2)
20. **Edo Bar-Zeev**, Uta Passow, Santiago Romero-Vargas Castrillón and Menachem Elimelech (2015). Transparent exopolymer particles (TEP): from aquatic environments and engineered systems to membrane biofouling. *Environmental Science & Technology* 49: 691–707. (Q1; IF-5.3; R-16/384-Chemistry; PC-17)
21. Sarah E. Kwan, **Edo Bar-Zeev\***, and Menachem Elimelech (2015). Biofouling in forward osmosis and reverse osmosis: measurements and mechanisms. *Journal of Membrane Science*. 493: 703-708. (Q1; IF-5.06; R-28/425-Materials science; PC-3)
22. Adi Levi, **Edo Bar-Zeev**, Hila Elifantz, Tom Berman, Ilana Berman-Frank (2015). Microbial community dynamics along a large scale, operational SWRO desalination facility. *Desalination*. 378: 44-52. (Q1; IF-3.75; R-7/187-Water sciences & technology; PC-1)
23. **Edo Bar-Zeev**, and Eyal Rahav (2015). Microbial metabolism of transparent exopolymer particles during the summer months along a eutrophic estuary system. *Frontiers in Microbiology* 6: 403. (Q1; IF-3.99; R-15\133-Microbiology; PC-2)
24. Ming Xie, **Edo Bar-Zeev**, Sara M. Hashmi, Long D. Nghiem, and Menachem Elimelech. Role of reverse divalent cation diffusion in forward osmosis biofouling. *Environmental Science & Technology*. 49: 13222-13229 (Q1; IF-5.3; R-16/384-Chemistry; PC-1)
25. **Edo Bar-Zeev**, François Perreault, Anthony P. Straub, and Menachem Elimelech (2015). Impaired performance of pressure-retarded osmosis due to irreversible biofouling. *Environmental Science & Technology*. 49: 13050-13058. (Q1; IF-5.3; R-16/384-Chemistry; PC-5)

### **Book Chapters:**

**Edo Bar-Zeev**, Ilana Berman-Frank and Tom Berman. (2013) “The Glory of the Sea” (in Hebrew). The Israeli Association of Aquatic Sciences, pp 221-213.

### **Research Grants:**

**i.** 2011- 2014, Israel Water Authority (annually- \$37000, for three years, Total- \$110,000):  
“*Novel, Nanotechnology approaches to reduce biofilm membrane damages in the desalination industry*”

Submitted by; Prof. Tom Berman (PI), Prof. Ilana Berman Frank (PI), Prof. Shlomo Margel (PI) and Ph.D candidate **Edo Bar-Zeev**.

**ii.** 2015- 2017, Ministry of National Infrastructure, Energy and Water Resources (annually- \$15000, for two years, Total- \$30,000):

“*Influence of large-scale desalination brine discharges on benthonic microbial communities*”  
Granted to: Dr. Eyal Rahav (PI) and **Dr. Edo Bar-Zeev** (Collaborator)

### **Positions in academic administration; Student mentoring:**

#### *\* Undergraduate;*

2009-2013, *Saly Naim, Ziv Leor, Ron Epshtain, Niv Scheter, Itai Cohen, Steven Krausz and Lea Winter.*

#### *\* Master's degree student;*

2009- 2012, *Natalia Belkin*, co-supervisor with Prof. Ilana Berman-Frank, degree completed with distinction.

2011- 2012, *Itamar Avishay*, co-supervisor with Prof. Ilana Berman-Frank, degree completed with honor.

2015-2015, *Anne Bogler*, co-supervisor with Prof. Menachem Elimelech

2015-Current, Hila Frank

#### *\* Doctoral degree student:*

2010- 2012, *Adi Levy*, co-supervisor with Prof. Ilana Berman-Frank.

2013-2014, *Sarah Kwan*, co-supervisor with Prof. Menachem Elimelech.

2016- current, *Anne Bogler*

## Membership in professional/scientific societies:

ISM; Israeli Society of Microbiology

IAAS; Israeli Association of Aquatic Sciences

ASLO; American Society of Limnology and Oceanography

EDS; European Desalination Society

## Lectures and Presentations (selected):

Conference	Place and Date (Lecture language)	Title of Lecture/Poster
IUGG Conference	2007 - <b>Lecture</b> Perugia, Italy	Contribution of Nitrogen to the Mediterranean Sea by the endosymbiotic, nitrogen fixing, cyanobacterium, <i>Richelia intracellularis</i>
Oceanography in the Eastern Levant Conference	2007 - <b>Lecture</b> IUI, Israel	The role of endosymbiotic, nitrogen fixing cyanobacterium <i>Richelia intracellularis</i>
European Desalination Society	2009 - <b>Chairman, Lecture</b> Baden-Baden, Germany	Transparent exopolymer particles: important agents for biofilm formation in desalination facilities
Israel Water Association	2010 - <b>Lecture</b> Tel-Aviv, Israel	The link between TEP and biofilm formation in desalination facilities
European Desalination Society	2010 – <b>Lecture</b> Tel-Aviv, Israel	Transparent exopolymer particles; microbial shuttles expediting biofilm formation in desalination facilities
Horizon 2020	2010 - <b>workshop</b> Tel Aviv, Israel	Capacity building/Mediterranean environment program (H2020 CB/MEP)
Israeli Association Aquatic Sciences	2011 - <b>Lecture, Chairman</b> Hadera , Israel	Ecology to practice; transparent exopolymer polysaccharides & biofilms in desalination systems
Environmental Impacts Know No Boundaries	2011 - <b>Lecture</b> La-Spezia, Italy	Oceanographic equipment and measurements
Lindau Nobel Laureate Meeting	2011 Lindau, Germany	Future impacts in physiology and medicine
Minerva School on Alternative, Sustainable Energy Options	2011 - <b>workshop</b> Nazareth, Israel	Open discussions on global sustainable energy, now and in the future
European Desalination Society	2012 - <b>Lecture</b> Barcelona, Spain	RSF biofiltration; environmentally friendly pretreatment solutions for the desalination industry
Ministry of Environmental Protection	2012 – <b>Invited Lecture</b> Jerusalem, Israel	Bioflocculation: chemical free pre-treatment technology for the desalination industry
Israeli Association Aquatic Sciences	2012 - <b>Lecture</b> Tzemach , Israel	Revised paradigm for aquatic biofilm formation: facilitation by microgel transparent exopolymer particles
Israeli Society of Microbiology	2012 - <b>Lecture</b> Ein-Gedi , Israel	Bacteria, transparent exopolymer particles (TEP) and surface interactions in aquatic environments
Biofilm6	2014 - <b>Lecture</b> Vienna , Austria	Life under hydraulic pressure: biofouling development and architecture
AEESP	2015- <b>Lecture</b> New Haven , USA	Impaired performance of pressure retarded osmosis due to irreversible biofouling
Israeli Society of Microbiology	2015- <b>Poster</b> Herzielia , Israel	Utilization of transparent exopolymer particles by heterotrophic bacteria along the eutrophic Qishon estuary
Israeli Society of Microbiology	2015- <b>Poster</b> Herzielia , Israel	Carbon limitation of heterotrophic dinitrogen fixation in the coastal Eastern Mediterranean Sea
Bat-Sheva Conference	2015- <b>Invited Lecture</b> Haifa, Israel	From Aquatic Microbes to Seagrass: What is the Impact of a Desalination Brine?

## Employment History:

From-To	Institute/Company	Job description
2014-2015	Yale University	Post-Doctoral, project manager – membrane biofouling
2009-2012	IDE Technologies	Biology consultant, specializing in desalination-biology nexus
2008-2009	The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University	Tutoring (undergraduate course): "Ecology"
2009-2011	The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University	Tutoring (undergraduate course): "Introduction to Limnology & Oceanography"
2008-2009	The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University	Tutoring (undergraduate course): "Evolutionary Biology"
2006-2011	Ruppin Academic Center School of Marine Sciences	Tutoring (undergraduate course): "Physical and Chemical Oceanography"
2006-2007	The Mina and Everard Goodman Faculty of Life Sciences, Bar-Ilan University	Tutoring (undergraduate course): "Introduction to Limnology & Oceanography"

## Field Work Experience:

From-To	Description
2006-2008	Participated in research cruises on-board the R/V Shikmona and R/V Mediterranean Explorer (MedEx). Determining the role and symbiotic interactions of different types of diazotrophs along the continental shelf.
2008	Participated in the R/V Shikmona cruise as part of the SESAME Levantine basin cruise. Defining the role of transparent exopolymer particles (TEP) in the carbon cycle.
2009	Evaluating pretreatment efficiencies in removing organic material in large scale desalination facilities in Israel and Cyprus. These experiments involved designing and constructing custom-made equipment.
2009	Organizing and participating in a cruise on board the R/V Mediterranean Explorer (MedEx) that was conducted along the Levantine basin to the Cyprus Eddy and the Rhodes Gyre.
2009-2010	Evaluating the potential of large-scale rapid fully operated sand filtration (RSF) as a bio-filter in Israel and Cyprus.
2011-2013	Project manager of a full scale bio-filtration pilot for the desalination industry that was carried out together with IDE technologies.