

ALEXANDER GOLBERG

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January 2021

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EDUCATION

2012-14	Postdoctoral Fellow, Center for Engineering in Medicine Harvard Medical School Host: Martin L. Yarmush, MD, PhD
2010-11	Postdoctoral Fellow, Bioengineering and Mechanical Engineering University of California, Berkeley Bioengineering/Mechanical Engineering, Host: Boris Rubinsky. (2010-2011).
2010	PhD, Bioengineering The Hebrew University of Jerusalem Supervisor: Boris Rubinsky, Committee: Haim D. Rabinowitch, Michael Belkin
2007	B.Sc. (cum laude), Biotechnology and Food Engineering Technion, Israel Institute of Technology

ACADEMIC POSITIONS

2018-present	Associate Professor Porter School of Environmental and Earth Sciences, Tel Aviv University
2014-2018	Senior Lecturer (Assistant Professor) Porter School of Environmental and Earth Sciences, Tel Aviv University
2015-present	Head, Master Program in Energy and Environment Porter School of Environmental and Earth Sciences, Tel Aviv University
2017-present	Head, Master Program MA track. Porter School of Environmental and Earth Sciences, Tel Aviv University
2014-present	Visiting Scientist, Center for Engineering in Medicine Massachusetts General Hospital
2014-2016	Management Committee (Israel) EU Cost Action TD1104 Electroporation based technologies and treatments.
2015-2019	Management Committee (Israel) EU Cost Action COST Action FA1406 Advancing knowledge on seaweed growth and development.
2014-present	Member of Working Group 4, Policy and Sustainability. The European Biofuels Technology Platform
2017 -present	School PhD committee member.
2017- present	Joint program of Mechanical Engineering, Geophysics and Environment committee member. Undergraduate curriculum committee member.
2019 -present	Elected Tel Aviv University Senate member.
2020- present	Head International MA program on Environmental Studies.

PROFESSIONAL EXPERIENCE

2018	Consultant Kampachi Worldwide Holdings, LP.
2005-10	R&D Research Engineer Life Technologies (Invitrogen, Thermo-Fischer)
2006-10	Consultant in Agricultural and Food Engineering Toppik Technologies and Investments Ltd
2000-03	Military Service Israel Air Defense Network

AWARDS AND HONORS

2018 Innovations in Wound Healing Faculty.
Alexander Golberg, PhD agolberg@gmail.com

- 2016 Pratt foundation, Food Security Conference in India Travel Award. Nov 22.
 2014 Shriners Hospitals for Children Fellowship (declined due to the move to faculty at TAU)
 2014 ILANIT Conference Travel Award. February 11
 2014 MGH Postdoc Association Recognition Award (nominated)
 2014 Robert B. Lindberg Award and Medal, America Burn Association
 2013 Travel Award, Invited Speaker, Gordon Research Conference on Tissue Repair and Regeneration, June 15
 2013 ISES Abraham Kogan Session Lecture Award on Renewable Energy, Israel, October 7
 2012 ECOR Postdoctoral Fellowship Award from the MGH Fund for Medical Discovery, MGH
 2012 Travel Award, Bio and Food Electrotechnologies, Solerno, Sept 26
 2012 Green Talents 25 World High Potentials in Sustainable Development Award, German Federal Ministry of Education and Research, <http://www.greentalents.de/890.php>
 2011 Regional finalist in California, Clean Tech Open Competition, USA. Macroalgae biorefineries for sustainable food and energy production.
 2010 Extensive news reporting and coverage by Nature, Reuters, Al-Jazeera, Russian 1st and Israel news channels for the “Biological Battery Invention”
<http://www.reuters.com/video/2010/07/28/potato-battery-new-and-improved?videoId=127046608>
 2008 Electroporation Based Technologies and Treatments, Travel Award, Ljubljana, Slovenia, November 15
 2004-06 Dean’s Award, For Excellence in Food Engineering Studies, Technion, Israel Institute of Technology
 2003 HAAS Award for Excellence in Studies and Community Work, Israel and US
 1997 First place, Regional Olympiad in Astronomy and Cosmic Physics, Kursk, Russia

SERVICE

- 2013-present Member, Associate Editorial Board, *TECHNOLOGY*
 2015 Guest Editor, Special Issue on Bioenergy, *TECHNOLOGY*

Reviewer for: Applied Energy, Renewable and Sustainable Energy reviews, Annual Reviews of Biomedical Engineering, Energy, Journal of Investigative Dermatology, Biofuels Bioproducts and Biorefinery, Energy Conversion and Management, Algal research, Scientific Reports, Biophysical J, Technology, Biotechnology and Bioengineering, Biomedical Engineering online, J. Membrane Biology, IEEE Transactions on Plasma Science, Process Biochemistry, Chemical Engineering Research Communication, J. Vascular and Interventional Radiology, Bioelectrochemistry, Cardio and Interventional Radiology, Technology in Cancer research and treatment, J. Wound Healing and Regenerative Medicine, Botanica Marina, Biomass Conversion and Biorefinery, Waste and Biomass Volatalisation, BioEnergy Research, Bioelectrochemistry, Chemical Engineering Reviews, Botanica marina, Analytica Chimica Acta, Advances in Wound healing.

Conference Leadership

- **Scientific Committee.** VIII Latin American Conference on Biomedical Engineering and XLII National Conference on Biomedical Engineering. October 2-5, 2019, Cancún, México.
- **Scientific Committee.** 3rd World Congress on Electroporation, Pulsed Electric Fields in Biology, Medicine, Food and Environmental Technologies. Toulouse. France. September 3-6, 2019.
- **Scientific Committee.** Israel Society of Ecology and Environmental Sciences Annual Conference. Tel Aviv. 18-21 June, 2019.
- **Chair:** Diving into the future. French-Israel workshop on marine biology. Tel Aviv. 1 November, 2018.
- **Scientific Committee.** 8th International Conference on Algal Biomass, Biofuels and Bioproducts. 11-13 June 2018. Seattle, WA. USA Elsevier Conference.
- **Chair.** Innovations in Bioengineering Technologies in the Service of Humanity and Society. Tel Aviv. 28 March, 2018
- **Scientific Committee.** 2nd World Congress on Electroporation, Pulsed Electric Fields in Biology, Medicine, Food and Environmental Technologies. Norfolk. VA. USA. September 24-28, 2017.
- **Scientific Committee.** 7th International Conference on Algal Biomass, Biofuels and Bioproducts. 18-21 June 2017. Miami, FL. USA Elsevier Conference.
- **Chair:** Marine Offshore Biorefinery workshop. Tel Aviv. May 24, 2017
- **Chair:** Industrial Eco-parks as Tools for Rural Area Sustainable Development. Kiryat Shmona, Israel, Oct 11, 2015
- **Session chair:** Pulsed Electric Fields and Electroporation in the Bioeconomy, 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies. Portoroz, Slovenia, Sept 6, 2015

- **Topic co-leader:** Life Cycle Assessment, Industrial Ecology, Environmental Impact of Energy Systems, ECOS 2015, Pau, France June 29, 2015
- **Topic organizer:** ASME 2012 Renewable Energy.

Grant funding committees and review panel:

- PRESTIGE. France. 2015
- Israel Ministry of Science. 2019
- German-Israel Science Foundation (GIF). 2018-2019
- FONDECYT. Comisión Nacional de Investigación. Chile. 2019
- US-Israel Science Foundation (BSF). 2020.

Thesis committee: Roe Peretz (PhD committee), Yan Rosen(PhD committee), Patrick Chavel (PhD committee), Mark Polikovsky (MSc committee), Doron Ashkenazi (MSc committee, PhD committee), Moshe Oziel (PhD committee).

MEMBERSHIPS:

NYACS 2011-present,
ASME 2013-present,
International Society for Electroporation-Based Technologies and Treatments 2015-present
AIChE 2016-present

GRANT FUNDING

EuroNanoMed2021 Golberg 1/3/21-28/2/24

“Molecular biopsy with electroporation for tissue diagnosis” MATISSE.

The goal of this multinational project (Israel, Norway, Turkey, Lithuania) to develop nanoparticles based therapies based on electroporation based biopsy and microfluidics.

Role: Coordinator. Total funding: Euro 740,000

Israel Innovation Authority Kamin Golberg/Yakhini/Shalom 1/3/21-28/2/23

“Development of pulsed electric field based biopsy for diagnosis of basal cell carcinoma”

The goal of this project is to develop new methods for skin cancer diagnostics

Role: PI. Total funding \$492,000

BARD US-Israel Agricultural Research and Development Fund

Zilberman/Palatnik/Golberg 1/12/2020- 31/11/2023

“Macroalgae Biorefinery supply chain economics”.

The goal of the project is to assess the economics of multiple products production from macroalgae

Role: co-I, Total funding: \$ 300,000

Israel Innovation Authority Kamin Raban/Golberg 1/9/20-31/8/22

“Devices and methods for spinal cord injury therapies with glutamate scavenging”

The goal of this project is to develop device and microfluidic based methods for glutamate scavenging enzymes encapsulation.

Role: PI. Total funding \$258,000

Ministry of Health Golberg/Confino/Israel/Livney/Obolski 1/10/20-30/9/23

“Clinical assessment of green seaweed proteins allergy potential”

The goal of the project is to produce 10kg of green seaweed protein and test it allergenicity in a clinical trial.

Role: PI (coordinator). Total funding: \$250,000

Good Food Institute Livney/Golberg/Israel/Palatnik 1/7/20-30/6/22
“Fish meat substitute from red seaweed proteins”
 The goal of this project is to develop extraction and extrusion processes to produce fish meat replacement with proteins extracted from the red seaweed.
 Role: PI. Total funding: \$250,000

Porter Foundation Golberg 1/5/20-7/7/20
“Sulfated macroalgae polysaccharides fighting COVID-19”
 The goal of this project is to screen 3 green seaweed sulfated polysaccharides against COVID-19 virus
 Role: PI. Total funding: \$22,500

Ministry of Energy and Infrastructures Golberg/Kribus/Gozin 1/5/20-30/4/23
“Hydrothermal liquefaction of municipal organic waste to liquid biofuels”
 The goal of this project is to develop a device, process and techno-economic analysis of hydrothermal liquefaction of organic food waste to liquid biofuels
 Role: PI (coordinator). Total funding: \$250,000

TAU XIN Center Golberg/Gozin 1/4/19-31/3/21
“Production of PHA for bioplastic from macroalgae and marine organisms”
 The goal of the project is to develop a process for sustainable PHA production for bioplastic from marine macroalgae
 Role: PI, Total funding \$100,000

Institute for Smart Transportation Golberg/Liberzon 1/4/19-31/3/20
“Sulphated polysaccharides from marine algae for oil consumption reduction by drag reduction in marine transport”
 The goal of this project is to test if macroalgae derived polymers can reduce drag on marine vessels
 Role: PI, Total funding \$38,000

TAU Breakthrough Innovative Research Grants. Fromm/Liberzon/ Golberg / Meroz 1/2/19-31/1/20
“Establishing a microfluidics ‘root-brain’ chip: towards elucidating and manipulating plant root behavior”
 The goal of this project is to develop a microfluidic system and machine learning methods to understand decision making of roots.
 Role: PI, Total funding \$104,000

Golberg (PI)/Yakhini 31/12/18-31/12/21
 Israel Ministry of Science
“Molecular harvesting with electroporation”
 The goal of this project is to develop an electroporation based process to molecules from solid tumors for diagnostics.
 Role: PI (coordinator), Total funding \$330,000

Golberg (PI-ISR)/ Yarmush (PI-US) 01/10/18-31/09/22
 Binational Science Foundation (BSF).
“Prevention of scars after burns with pulsed electric fields”
 The goal of this project is to develop a device for scar treatment after burns with pulsed electric fields
 Role: PI, total funding \$320,000.

Raymond and Beverly Sackler Fund for Convergence Research in Biomedical, Physical and Engineering Sciences
“Development of multiscale model of offshore algae farms” Golberg/Liberzon/Rubinsky 1/10/18- 31/09/2019

Role: PI, total funding \$22,000

Triangle R&D TAU 59086 Golberg/Gozin 1/03/18-28/02/2019
“Dead sea halophytic bacteria for production of polyhydroxyalkanoates”
 The goal of this pilot project is to isolate new PHA producing bacteria from the Dead Sea for Energy applications
 Role: PI. Total funding: \$ 4,000

US-4986-17 F Zilberman/Palatnik/Golberg 1/12/2017- 31/11/2018
 BARD
“Assessing the economics of processed natural resources - the case of seaweed”.
 The goal of the project is to assess the economics of multiple products production from macroalgae
 Role: co-I, Total funding: \$ 100,000

Liberzon/Golberg (PI) 1/2/2017- 31/1/2018
 TAU Gordon Center for Energy Studies
“Nutrients supply for intensive offshore macroalgae cultivation”.
 The goal of the project is to improve the productivity of macroalgae biomass production through improving the nutrients supply.
 Role: co-I, Total funding: \$ 6,000

Golberg (PI)/Liveny/Israel 28/12/16-27/12/19
 Israel Ministry of Science
“Securing food supply by producing starch from marine macroalgae with pulsed electric fields”
 The goal of this project is to develop a electroporation based process to extract starch from macroalgae.
 Role: PI, Total funding \$300,000

Golberg (PI) /Yakhini 01/10/16-02/02/18
 Microsoft Azure Award
“Parallel computing tools for chemometric analysis of tissues”.
 Role: PI, total funding \$20,000.

Golberg (PI) 01/05/17-30/04/20
 Israel Ministry of Agriculture.
“Development of pulsed electric field device for waste poultry dehydration and biochemical extraction”
 The goal of this project is to develop a device for energy efficient dehydration and valuable chemical extraction from animal waste
 Role: PI, total funding \$213,000.

Golberg (PI-ISR)/Usta/Yarmush (PI-US) 01/01/17-31/06/18
 Binational Science Foundation (BSF).
“Wound disinfection with pulsed electric fields”
 The goal of this project is to develop a device for burn wounds disinfection with pulsed electric fields.
 Role: PI, total funding \$150,000.

Golberg (PI) 01/07/16-31/06/19
 Israel Ministry of Economy. Kamin program.
“Development of pulsed electric field device for phytochemical extraction from biomass”
 The goal of this project is to develop a device for macroalgae treatment with pulsed electric fields and assess the allergenic properties of this new source of proteins.
 Role: PI, total funding \$362,000.

- Golberg (PI)/Liveny/Israel 01/06/16-31/10/17
- Israel Ministry of Health
“Extraction of functional proteins from macroalgae using non-thermal pulsed electric fields”
 The goal of this project is to develop a electroporation based process to extract functional proteins from macroalgae.
 Role: PI, Total funding \$40,000
- Golberg (PI)/Liberzon/Israel/HaKohen 01/05/16-30/04/19
- Israel Ministry of Energy and Water Resources.
“Assessment of offshore macroalgae biomass production for energy in Israel”
 The overall goal is to develop a model and climate simulator device to assess the potential of offshore macroalgae biomass production to provide for renewable energy in Israel.
 Role: PI, Total funding \$125,749
- Golberg (PI)/Kribus/Guttman 01/05/16-30/04/19
- Israel Ministry of Energy and Water Resources.
“Processes for biomass deconstruction for biofuels production”
 The overall goal is to develop a new process that is based on sub-critical water hydrolysis, potentially driven with solar energy, in combination with post-treatment by enzymatic cocktails for rapid and effective raw biomass decomposition.
 Role: PI, Total funding \$223,000
- Golberg (PI)/Liberzon 01/07/15-30/6/18
- TAU Center for Innovation in Transportation grant.
“Off-shore floating system for intensive cultivation of macroalgae for transportation biofuel production”
 The overall goal is to design and prototype a system for maximum photon and nutrient transformation to macroalgae biomass offshore.
 Role: PI, Total funding: \$75,000
- Liberzon/Golberg (PI) 1/2/2015- 31/1/2016
- TAU Gordon Center for Energy Studies
“Improving macroalgae biomass for energy yields with intensive cultivation”.
 The goal of the project is to improve the productivity of macroalgae biomass production through improving the photosynthesis cycles.
 Role: co-PI, Total funding: \$ 12,000
- 85120 Yarmush (PI) 01/01/13-12/31/14
 Shriners Hospitals
"Scarless Wound Healing Therapy by Irreversible Electroporation"
 The overall goal is to design and prototype an irreversible electroporation device and protocols that limits wound fibroplasia and neo-angiogenesis without disrupting established vessels and matrix.
 Role: Research Fellow, Total funding: \$120,000
- Lian (PI) 01/ 03/14-30/08/14
- BWH Innovation microgrant.
“Epigenetic regulation Hypertrophic scarring and Scarless Regeneration”
 The objective of this proposal was to elucidate the epigenetic regulation of the scarless skin regeneration after IRE ablation in comparison to the scarring after third degree burns.
 Role: Co-investigator
- Golberg (PI) 01/ 09/12-30/08/13
- ECOR Postdoctoral Fellowship Award from the MGH Fund for Medical Discovery
“ Burn wounds disinfection with non-thermal pulsed electric fields”
 The goal of this proposal was to develop instrumentation and protocols for burn wounds disinfection with irreversible electroporation.
 Role: PI, total funding: \$40,000

LANGUAGES

English- Fluent.
Hebrew- Fluent
Russian- Fluent

PUBLICATIONS

Journal Papers:

- 1 **Golberg A**, Belkin M, Rubinsky B. Irreversible Electroporation for Microbial Control of Drugs in Solution. **AAPS PharmSciTech** 2009; 10 (3): 881-886.
- 2 **Golberg A**, Rubinsky B. A statistical model for multidimensional irreversible electroporation cell death in tissue. **BioMedical Engineering OnLine** 2010; 9:13.
- 3 **Golberg A**, Rabinowitch HD, Rubinsky B. Galvanic apparent internal impedance: an intrinsic tissue property. **Biochemical and Biophysical Research Communications** 2009; 389: 168-171.
- 4 **Golberg A**, Rabinowitch HD, Rubinsky B. Zn/Cu- vegetative batteries, bioelectrical characterizations and primary cost analyses. **J. Renewable Sustainable Energy**, 2010 doi:10.1063/1.3427222 2010, highlighted in *Nature* 2010; 465,848.
- 5 **Golberg A**, Rubinsky B. The effect of electroporation type pulsed electric fields on DNA in aqueous solution. **Technology in Cancer Research and Treatment** 2010; 9(4):423-430.
- 6 **Golberg A**, Fischer Y, Belkin M, Rubinsky B. Intermittently Delivered Pulsed Electric Fields for Sterile Storage of Turbid Media. **IEEE Transactions on Plasma Science** 2010; 38 (11):3211-3218.
- 7 **Golberg A***, Laufer S*, Rabinowitch HD, Rubinsky B. In vivo non thermal irreversible electroporation impact on rat liver galvanic apparent internal resistance. **Phys. Med. Biol.** 2011; 56: 951-963. * Equal contribution.
- 8 **Golberg A**, Rae CS, Rubinsky B. Listeria monocytogenes cell wall constituents charge effect on irreversible electroporation threshold. **Biochimica et Biophysica Acta-Biomembranes** 2012; 1818(3):689-94.
- 9 **Golberg A**, Rubinsky B. A numerical study towards electroporation based treatment planning considering muscle contraction. **Technology in Cancer Research and Treatment**, 2012; 11(2):189-201.
- 10 Francois F, Rubinsky L, **Golberg A**, Rubinsky B. Variable Electric Fields for High Throughput Electroporation Protocol Design. **Biotechnology and Bioengineering** 2012; 109(8): 2168-2171. **Editor Spotlight Key Article**
- 11 Linshiz G, **Golberg A**, Konry T, Hillson N. Fusion of Biology, Computer Science and Engineering – in the quest to efficient and successful Synthetic Biology. **Perspectives in Biology and Medicine** 2012; 55(4) 503-520.
- 12 **Golberg A**, Bei M, Sheridan R, Yarmush M.L. Regeneration and control of human fibroblast cell density by intermittently delivered pulsed electric fields. **Biotechnology and Bioengineering**, 2013; 110(6):1759-68.
- 13 **Golberg A**. Analytical model of local distribution of chemicals in tissues with first order rate metabolism kinetics. **Chemical Engineering Communications** 2013; 201(1): 102-119.
- 14 **Golberg A**, Yarmush ML. Nonthermal Irreversible electroporation: Fundamental, Applications, Challenges. **IEEE Transactions on Biomedical Engineering** 2013; 60 (3):707-14.
- 15 **Golberg A**, Yarmush ML, Konry T. Pico-liter immunosorbent droplet microfluidic platform for point-of-care tetanus diagnostics. **Microchimica Acta** 2013; 180 (9-10): 855-860.
- 16 **Golberg A**. The Impact of Pulsed Electric Fields on Cells and Biomolecules, a Comment on ‘Lightning-triggered electroporation and electrofusion as possible contributors to natural horizontal gene transfer by Tadej Kotnik’. **Physics of Live Reviews** 2013; 10 (3): 382-383.
- 17 **Golberg A**, Broelsch GF, Bohr S, Mihm MCJr, Austen WGJr, Albadawi H, Watkins MT, Yarmush, ML. Non-Thermal, Pulsed Electric Field Cell Ablation: A Novel Tool for Regenerative Medicine and Scarless Skin Regeneration. **Technology** 2013; 1: 1-8.
- 18 **Golberg A**, Vitkin E, Linshiz G, Ahmad-Khan S, Hillson NJ, Yakhini Z, Yarmush ML. Proposed Design of Distributed Marine Biorefineries: Thermodynamics, Technology, and Sustainability Implications for Developing economies. **Biofuels, Bioproducts & Biorefining** 2014; 8(1): 67-82.
- 19 Yarmush ML, **Golberg A**, Sersa G, Kotnik T, Miklavcic D. Electroporation Based Technologies for Medicine: Principles, Applications, and Challenges. **Annual Reviews of Biomedical Engineering** 2014, 16: 295-320.
- 20 Deipolyi, AR, **Golberg A**, Yarmush ML, Arellano RS, Oklu R. Irreversible electroporation: evolution of a laboratory technique to interventional oncology. **Diagnostic and Interventional Radiology** 2014; 20(2):147-54.
- 21 Konry T, **Golberg A**, Yarmush ML. Live individual cell functional phenotyping in droplet reactor. **Scientific Reports** 2014, 3, Article number 3179 doi:10.1038/srep03179.
- 22 **Golberg A***, Linshiz G*, Kravets I, Stawski N, Hillson N, Yarmush ML, Marks RS, Konry, T. Cloud-enabled microscopy and droplet microfluidic platform for specific detection of Escherichia coli in water. **PLoS ONE** 2014

- 9(1): e86341, * Equal contributions.
- 23 **Golberg A**, Broelsch GF, Vecchio D, Khan S, Hamblin MR, Austen WGJr, Sheridan RL, Yarmush ML. Eradication of multidrug-resistant *A. baumannii* in burn wounds by antiseptic pulsed electric fields. **Technology** 2014. 2(2):153-160.
 - 24 **Golberg A**, Broelsch GF, Vecchio D, Khan S, Hamblin MR, Austen WGJr, Sheridan RL, Yarmush ML. Pulsed electric fields for burn wound disinfection. **Journal of Burn Care and Research** 2015. 36(1), 7-13. **Robert B. Lindberg Award** from American Burn Association.
 - 25 Quinn KP, **Golberg A**, Broelsch GF, Khan S, Villiger M, Bouma B, Austen WGJr, Mihm MC, Yarmush ML, Georgakoudi I. An automated image processing method to quantify of collagen fiber organization within cutaneous scar tissue. **Experimental Dermatology** 2015; 24(1),78-80.
 - 26 Cohen N, Sabhachandani P, **Golberg A**, Konry,T. Approaching near real-time biosensing: Microfluidic microsphere based biosensor for real-time analyte detection. **Biosensors and Bioelectronics** 2015; 66(15), 454-460.
 - 27 **Golberg A**, Bruinsma B, Uygun B, Yarmush ML. Tissue heterogeneity in structure and conductivity contribute to cell survival during irreversible electroporation ablation by “electric field sinks”. **Scientific Reports** 2015, 8485, doi:10.1038/srep08485.
 - 28 **Golberg A**. Long-term *Listeria monocytogenes* proliferation control in milk by intermittently delivered pulsed electric fields, implications for food security in the low-income countries. **Technology** 2015. 3(1):1-6.
 - 29 **Golberg A**, Khan S, Belov V, Quinn KP, Albadawi H, Broelsch GF, Watkins MT, Georgakoudi I, Papisov M, Mihm MCJr, Austen WGJr, Yarmush ML. Skin rejuvenation with pulsed electric fields. **Scientific Reports**. 2015; 12;5:10187. doi: 10.1038/srep10187.
 - 30 **Golberg A**, Liberzon A. Modeling of smart mixing regimes to improve marine biorefinery productivity and energy efficiency. **Algal Research** 2015. 11:28-32.
 - 31 **Golberg A**. Environmental exergonomics for sustainable design and analysis of energy systems. **Energy** 2015; 88, 314-321.
 - 32 Vitkin E, **Golberg A***, Yakhini Z*, BioLEGO — a web-based application for biorefinery design and evaluation of serial biomass fermentation. **Technology** 2015; 3(2, 3): 1-10. *Equal Senior Author.
 - 33 **Golberg A**. Bioenergy—when, where and how? **Technology** 2015. 3(2,3):79. Editor Preface
 - 34 Bohr S, Patel SJ, Vasko R, **Golberg A**, Shen K, Berthiaume F, Yarmush, ML. The Role of CHI3L1 (Chitinase-3-Like-1) in the Pathogenesis of Infections in Burns in a Mouse Model. **PlosOne**, 2015. 10(11): e0140440.
 - 35 Khan S, Blumrosen G, Vecchio D, **Golberg A**, McCormack MC, Yarmush ML, Hamblin MR, Austen WGJr, Eradication of multidrug-resistant pseudomonas biofilm with pulsed electric fields. **Biotechnology and Bioengineering**, 2016, 113 (3):643-50.
 - 36 Lo W, Villiger M, **Golberg A**, Broelsch FG, Khan S, Lian C, Austen W.G Jr, Yarmush ML, Bouma B. Longitudinal, 3D In Vivo Imaging of Collagen Remodeling in Murine Hypertrophic Scars using Polarization-sensitive Optical Frequency Domain Imaging. **Journal of Investigative Dermatology**, 2016. 136: 84-92. (cover page)
 - 37 **Golberg A**, Bruinsma, BG, Jaramillo M, Yarmush M.L, Uygun, B.E. Rat liver regeneration following ablation with irreversible electroporation. **PeerJ**, 2016 e1571. doi: 10.7717/peerj.1571.
 - 38 Jiang, R, Ingle, K.N, **Golberg A**. Macroalgae (Seaweed) for liquid transportation biofuel production: What is next? **Algal Research**. 2016, 14: 48–57. **Editor’s choice**.
 - 39 Castleberry, SA, **Golberg, A**, Abu Sharkh,M, Khan,S, Almquist, BD, Austen WG Jr., Yarmush,ML, Hammond, PT. Nanolayered siRNA Delivery Platforms for Local Silencing of CTGF Reduce Cutaneous Scar Contraction in Third-Degree Burns. **Biomaterials**. 2016, 95: 22-34.
 - 40 Lehahn Y, Ingle, K.N, **Golberg A**. Global potential of offshore and shallow waters macroalgal biorefineries to provide for food, chemicals and energy: feasibility and sustainability. **Algal research**. 2016. 17: 150–160
 - 41 Polikovskiy, M, Fernand, F, Sack, M, Frey,W, Müller G, **Golberg, A**. Towards marine biorefineries: Selective proteins extractions from marine macroalgae *Ulva* with pulsed electric fields. **Innovative Food Science & Emerging Technologies**. 2016, 37 (B): 194–200.
 - 42 **Golberg, A**, Sack, M, Teissie, J, Pataro, G, Pliquet, U, Saulis, G, Töpfl, S, Miklavcic, D, Vorobiev, E, Frey, W. Energy Efficient Biomass Processing with Pulsed Electric Fields for Bioeconomy and Sustainable Development. **Biotechnology for Biofuels**. 2016, 9:94.
 - 43 Blumrosen G*, Abazari A*, **Golberg A***, Yarmush M^, Toner M. Single-step electrical field strength screening to determine electroporation induced transmembrane transport parameters. **BBA – Biomembranes**. 2016. 1858(9):2041-2049. *Equal first author. ^Corresponding author.
 - 44 Jiang R, Linzon Y, Vitkin E, Yakhini Z, Chudnovsky A, **Golberg A**. Thermochemical hydrolysis of macroalgae *Ulva* for biorefinery: Taguchi robust design method. **Scientific Reports**. 2016, 27761.
 - 45 **Golberg, A**, Villiger, M, Khan, S, Quinn, K, Lo, W.C.Y., Bouma, B.E., Mihm, M C.Jr., Austen, W. G. Jr.,

- Yarmush, L.M. Preventing scars after injury with partial irreversible electroporation. **Journal of Investigative Dermatology**. 136 2016, 2297-2304.
- 46 Fernand, F, Israel, A, Skjermo, J, Wichard, T, Timmermans, K.R, **Golberg, A**. Offshore macroalgae biomass for bioenergy production: Environmental aspects, technological achievements and challenges. **Renewable and Sustainable Energy Reviews**. 2017. 75:35-45.
 - 47 Shefer, S, Israel, A, **Golberg A***, Chudnovsky A*. Carbohydrate-based phenotyping of the green macroalga *Ulva fasciata* using near infrared spectrometry: potential implications for marine biorefinery. **Botanica Marina**. Special Issue on macroalgae growth, development and reproduction. 2017. 60:219-228. *Equal Senior Author.
 - 48 **Golberg, A**, Villiger M, Broelsch G.F, Quinn K.P, Albadawi H, Khan S, Watkins MT, Georgakoudi I, Austen, Jr. WG, Bei M, Bouma B, Mihm, Jr. MC, Yarmush ML. Skin regeneration with all accessory organs following ablation with irreversible electroporation. **Journal of Tissue Engineering and Regenerative Medicine**. 2017. DOI 10.1002/term.2374. 1-16.
 - 49 Chemodanov, A, Robin A, **Golberg A**. Design of marine macroalgae photobioreactor integrated into building to support seagrass agriculture for biorefinery and bioeconomy. **Bioresource Technology**. 2017 241: 1084-1093.
 - 50 Buschmann,AH, Camus,C, Infante,J, Neori, Israel, Hernández-González, MC, Pereda, SV, Gomez-Pinchetti, JL, **Golberg, A**, Tadmor-Shalev, N, Critchley, AT Seaweed production: Overview of global state of exploitation, farming and emerging research activity. **European Journal of Phycology**. 2017. 52(4): 391–406.
 - 51 Chemodanov, A, Jinjikhashvily, G, Habiby, O, Liberzon, A, Israel, I, Yakhini, Z, **Golberg, A**. Net Primary Productivity, biofuel production and CO₂ emissions reduction potential of *Ulva* sp. (Chlorophyta) biomass in a coastal area of the Eastern Mediterranean. **Energy Conversion and Management**. 2017. 148: 1497-1507
 - 52 Ingle, K, Vitkin, E, Arthur Robin, A, Zohar Yakhini, Z Daniel Mishori, D, **Golberg, A**. Macroalgae biorefinery from *Kappaphycus alvarezii*: conversion modeling and performance prediction for India and Philippines as examples. **BioEnergy Research**. 2017. 1-11.
 - 53 Robin, A, Chavel, P, Chemodanov, A, Israel, A, **Golberg, A**. Diversity of monosaccharides in marine macroalgae from the Eastern Mediterranean Sea. **Algal Research**. 2017. 28:118-127.
 - 54 Kravez, E, Villiger, M., Bouma, B, Yarmush, M, Yakhini, Z. **Golberg, A**. Prediction of scar size in rats six months after burns based on early post injury polarization-sensitive optical frequency domain imaging. **Frontiers in Physiology**. 2017. 8:967. doi: 10.3389/fphys.2017.00967
 - 55 Ingle, K, Polikovskiy, M, Chemodanov, A, **Golberg, A**. Marine integrated pest management (MIPM) for sustainable seagrass agriculture. **Algal Research**. *Special Issue on Algae Crop Protection*. 2018. 29: 223-232.
 - 56 Polikovskiy M, Sharon A and **Golberg A**. Enhancing energy literacy in children using zn/cu/potato batteries [version 1; referees: awaiting peer review]. **F1000Research** 2018, 7:24 (doi: 10.12688/f1000research.13228.1)
 - 57 Robin, A, Sack, M, Israel, A, Frey, W, Müller, G, **Golberg, A**. Deashing macroalgae biomass by pulsed electric field treatment. **Bioresource Technology**. 2018. 255:131-139
 - 58 Chudnovsky A, **Golberg A**, Linzon Y. Monitoring complex monosaccharide mixtures derived from macroalgae biomass by combined optical and microelectromechanical techniques. **Process Biochemistry**. 2018. 68: 136-145.
 - 59 Habiby O, Nahor, O, Israel A, Liberzon A, **Golberg A**. Exergy efficiency of light conversion into biomass in the green macroalga *Ulva* sp. (Chlorophyta) cultivated under the pulsed light in a photobioreactor. **Biotechnology and Bioengineering**. 2018. 115(7):1694-1704..
 - 60 Zollmann, M, Traugott, H, Chemodanov, A, Liberzon, A, **Golberg A**. Exergy efficiency of solar energy conversion to biomass of green macroalgae *Ulva* (Chlorophyta) in the photobioreactor. **Energy Conversion and Management**. 2018. 167: 125-133.
 - 61 Robin A, Kazir M, Sack M, Israel A, Frey W, Müller G, Livney Y, **Golberg A**. Functional protein concentrates extracted from the green marine macroalga *Ulva* sp., by high voltage pulsed electric fields and mechanical press. **ACS Sustainable Chemistry & Engineering**. 2018, 6, 11, 13696-13705.
 - 62 Li X, Saeidi N, Villiger M, Albadawi H, Jones J.D, Quinn K.P, Austen W.G.Jr, **Golberg A***, Yarmush M.L. Rejuvenation of aged rat skin with pulsed electric fields. **Journal of Tissue Engineering and Regenerative Medicine**. 2018. 12:2309–2318.. *Corresponding author.
 - 63 Kazir, M, Abuhassira, Y, Robin, A, Nahor, O, Luo, J, Israel, A, **Golberg, A**, Livney, YD Extraction of proteins from two marine macroalgae, *Ulva* sp. and *Gracilaria* sp., for food application, and evaluating digestibility, amino acid composition and antioxidant properties of the protein concentrates. **Food Hydrocolloids**. 2019. 87: 194-203
 - 64 Ghosh, S, Gnaïm, R., Greiserman S, Fadeev L, Gozin M, **Golberg, A**. Macroalgal biomass subcritical hydrolysates for the production of polyhydroxyalkanoate (PHA) by *Haloferax mediterranei*. **Bioresource Technology**. 2019. 271: 166-173.
 - 65 Polikovskiy, M, Fernand, F, Sack, M, Frey, W, Müller G, **Golberg, A**. *In silico* food allergenic risk evaluation of proteins extracted from macroalgae *Ulva* sp. with pulsed electric fields. **Food Chemistry**. 2019. 15; 276:735-744.
 - 66 Ghosh S, Gillis A, Sheviriyov J, Levkov K, **Golberg A**. Towards waste meat biorefinery: extraction of proteins from

- waste chicken meat with non-thermal pulsed electric fields and mechanical pressing. **Journal of cleaner production**. 2019. 208 (20). 220-231.
- 67 Rubin A.E, Usta O.B, Schloss R, Yarmush M.L, **Golberg A**. Selective inactivation of *Pseudomonas aeruginosa* and Staphylococcus epidermidis with pulsed electric fields and antibiotics. **Advances in Wound Care**. 2019. 8 (4), 136-148
 - 68 Peleg Y, Shefer S, Anavy L, Chudnovsky A, Israel A, **Golberg A***, Yakhini Z*. Sparse NIR Optimization method (SNIRO) to quantify analyte composition with visible (VIS)/near infrared (NIR) spectroscopy (350nm-2500nm). **Analytica Chimica Acta**. 2019. 1051: 32-40. *Corresponding author.
 - 69 Prabhu M, Chemodanov A, Gottlieb R, Kazir M, Nahor O, Gozin M, Israel A, Livney Y, **Golberg A**. Starch from the sea: the green macroalga *Ulva* sp. as a potential source for sustainable starch production in the marine biorefinery. **Algal Research**. 2019. 37: 215-227
 - 70 Chemodanov A, Robin A, Jinjikhashvily G, Yitzhak D, Liberzon A, Israel A, **Golberg A**. Feasibility study of *Ulva* sp. (Chlorophyta) intensive cultivation in a coastal area of the Eastern Mediterranean Sea. **Biofuels, Bioproducts & Biorefining** 2019. 13(4) 864-877.
 - 71 Rubin A.E, Levkov, K, Usta B, Yarmush M, **Golberg A**. IGBT-based pulsed electric fields generator for disinfection: design and in vitro studies on *Pseudomonas aeruginosa*. **Annals of Biomedical Engineering**. 2019. 47(5):1314-1325
 - 72 Huerta-Núñez L.F.E, Gutierrez-Iglesias G., Martinez-Cuazitl A., Mata-Miranda M.M., Alvarez-Jimenez V.D, Sánchez-Monroy V., **Golberg A**, and Gonzalez-Diaz C.A. A biosensor capable of identifying low quantities of breast cancer cells by electrical impedance spectroscopy. **Scientific Reports**. 2019. 9: 6419.
 - 73 Zollmann M , Robin A, Prabhu M, Polikovsky M, Gillis A , Greiserman S, **Golberg A**. Green technology in green macroalgal biorefineries. **Phycologia**. 2019. 58(5):516-534.
 - 74 Greiserman S, Epstein M, Chemodanov A, Steinbruch E, Prabhu M, Guttman L, Jinjikhashvily G, Shamis O, Gozin M, Kribus A, **Golberg A**. Co-production of monosaccharides and hydrochar from green macroalgae *Ulva* (Chlorophyta) sp. with subcritical hydrolysis and carbonization. **Bioenergy Research**. 2019. 12 (4), 1090-1103.
 - 75 Zollmann M, Traugott H, Chemodanov A, Liberzon A, **Golberg A**, Deep water nutrient supply for an offshore *Ulva* sp. cultivation project in the Eastern Mediterranean Sea: experimental simulation and modeling. **Bioenergy Research**. 2019. 12: 1113–1126.
 - 76 Prabhu MS, Levkov K, Livney YD, Israel A, **Golberg A**. High-voltage pulsed electric fields preprocessing enhances extraction of starch, proteins and ash from marine macroalgae *Ulva ohnoi*. **ACS Sustainable Chemistry & Engineering**. 2019. 7(20) 17453-17463
 - 77 Negev E , Yezioro A , Polikovsky M , Kribus A , Cory J , Shashua-Bar L , **Golberg A**. Algae Window for reducing energy consumption of building structures in the Mediterranean city of Tel-Aviv, Israel. **Energy and Buildings**. 2019 . 204. 109460
 - 78 Levkov, K, Vitkin E, Gonzalez-Diaz C.A, **Golberg A**. A laboratory IGBT-based high-voltage pulsed electric field generator for effective water diffusivity enhancement in chicken meat. **Food and Bioprocess Technology**. 2019. 12(12): 1993–2003.
 - 79 **Golberg A.**, Shevirvov J, Solomon O, Anavy L, Yakhini Z, Molecular harvesting with electroporation for tissue profiling. 2019. **Scientific reports**. 9: 15750.
 - 80 Gnaim R, Shevirvov J, **Golberg A**, Ames G, Oziel M, González CA. Label-free cDNA detection based on RF scattering parameters: A new approach for an inexpensive gene sensor. **ASME Journal of Medical Devices**. 2020. 4(1):014502.
 - 81 Israel A, **Golberg A**, Neori A. The Seaweed Resources of Israel in the Eastern Mediterranean Sea. **Botanica Marina**. 2020. 1-10.
 - 82 Ingle, K, Traugott H, **Golberg A**. Challenges for marine macroalgal biomass production in Indian coastal waters. **Botanica Marina**. 2020. 63 (4): 327–340.
 - 83 Vitkin E, Gillis A, Polikovsky M, Bender B, **Golberg A**, Yakhini Z. Distributed flux balance analysis simulations of serial biomass fermentation by two organisms. **PlosOne**. 2020. 15(1): e0227363
 - 84 Prabhu, M, Levkov, K, Levin O, Vitkin E, Israel A, Chemodanov A, **Golberg A**. Energy efficient dewatering of far offshore grown green macroalgae *Ulva* sp. biomass with pulsed electric fields and mechanical press. **Bioresource Technology**. 2020, 295: 122229.
 - 85 Levkov K, Linzon Y, Mercadal B, Ivorra A, González CA, **Golberg A**. High-voltage pulsed electric field laboratory device with asymmetric voltage multiplier for marine macroalgae electroporation. **Innovative Food Science and Emerging Technologies**. 2020. 60:102288.

- 86 Prabhu MS, Israel A, Palatnik RR, Zilberman D, **Golberg A**. Integrated biorefinery process for sustainable fractionation of *Ulva ohnoi* (Chlorophyta): process optimization and revenue analysis. **Journal of Applied Phycology**. 2020. 32: 2271–2282.
- 87 Traugott, H., Zollmann, M., Cohen, H, Chemodanov, A., Liberzon, A., **Golberg, A**. Aeration and nitrogen modulated growth rate and chemical composition of green macroalgae *Ulva* sp. cultured in a photobioreactor. **Algal Research**. 2020. 47: 101808.
- 88 Gnaim R, **Golberg, A**, Sheviriyov J, Rubinsky B, González C.A. Detection and Differentiation of Bacteria by Using Electrical Bio-Impedance Spectroscopy. **BioTechniques**. 2020. 69:27-27.
- 89 Polikovsy,M, Califano G, Dunger N, Wichard T, **Golberg A**. Engineering bacteria-seaweed symbioses for modulating the photosynthate content of *Ulva* (Chlorophyta): Significant for the feedstock of bioethanol production. **Algal Research**. 2020. 49:101945.
- 90 Das, B Shrirao A, Berthiaume F, **Golberg A**, Schloss R, Yarmush M. Differential cell death and regrowth of dermal fibroblasts and keratinocytes after application of pulsed electric fields. **Bioelectricity**. 2020. 2(2):175-185
- 91 González C.A., **Golberg, A**. Sensitivity analysis of electrical bioimpedance patterns of breast cancer cells labeled with magnetic nanoparticles: forming the foundation for a biosensor of circulating tumor cells. **Physiological Measurement**. 2020. 41(6):064001.
- 92 Levkov K, **Golberg A**, Asymmetric voltage multiplying circuit coupled to sliding electrodes for biomass fractionation with high-voltage and high current pulsed electric fields. **Technology**. 2020. 8:1-12.
- 93 Polikovsky M, Gillis A, Steinbruch E, Robin A, Epstein M, Kribus A, **Golberg A**. Biorefinery for the co-production of protein, hydrochar and additional co-products from a green seaweed *Ulva* sp. with subcritical water hydrolysis. **Energy Conversion and Management**. 2020. 225 (1): 113380.
- 94 Ghosh, S, Gillis A, Levkov K, Vitkin E, **Golberg A**. Saving energy on meat air convection drying with pulsed electric field coupled to mechanical press water removal. **Innovative Food Science and Emerging Technologies**. 2020. 66: 102509.
- 95 Steinbruch E, Drabik D, Epstein M, Ghosh S, Prabhu MS, Gozin M, Kribus A, **Golberg A**. Hydrothermal processing of a green seaweed *Ulva* sp. for the production of monosaccharides, polyhydroxyalkanoates, and hydrochar. **Bioresource Technology**. 2020. 318: 124263
- 96 Wu M, Rubin AE, Dai T, Usta OB, **Golberg A***, Yarmush ML. High-voltage pulsed electric fields eliminate *Pseudomonas aeruginosa* stable infection in a mouse burn model. **Advances in Wound Care**. 2020. Accepted.
*Corresponding author
- 97 R Gnaim, M Polikovsky, R Unis, J Sheviriyov, M Gozin, **A Golberg**. Marine Bacteria Associated with the Green Seaweed *Ulva* sp. for the Production of Polyhydroxyalkanoates. **Bioresource Technology**. 2021. 124815
- 98 Ghosh S, Greiserman S, Chemodanov A, Margaretha Slegers PM, Belgorodsky B, Epstein M, Kribus A, I Gozin M, Chen G-Q, **Golberg A**. Polyhydroxyalkanoates and biochar from green macroalgal *Ulva* sp. biomass subcritical hydrolysates: Process optimization and a priori economic and greenhouse emissions break-even analysis. **Science of the Total Environment**. 2021. 770: 145281
- 99 Nahor O, Morales-Reyes CF, Califano C, Wichard T, **Golberg A**, Israel A. Flow cytometric measurements as a proxy for sporulation intensity in the cultured macroalga *Ulva* (Chlorophyta). 2021. **Botanica Marina**. Accepted

Conference full papers (peer reviewed)

- 1 **Golberg A**. Microbial control in milk by intermittently delivered pulsed electric fields. Proceedings of Bio and Food Electrotechnologies 2012, pp 1-6, Salerno Italy.
- 2 **Golberg A**, Linshiz G, Hillson NJ, Koudritsky M, Chemodanov A. Distributed marine biorefineries for developing economies. **Proceeding of ASME Congress and Exhibition** 2012; IMECE2012-86051, pp 1-9.
- 3 Blumrosen G*, **Golberg A***, Abazari A*, Tonner M, Yarmush ML. Efficient Procedure and Methods to Determine Critical Electroporation Parameters. **Proceedings of 2014 IEEE 27th International Symposium on Computer-Based Medical Systems (CBMS)** 2014; pp: 314 – 318, New York, NY. * Equal contributions.
- 4 Khan S **Golberg A**, McCormack M, Bei M, Yarmush ML, Austen WGJr. Hair Stimulation with Pulsed Electric Fields. **Plastic and Reconstructive Surgery** 2015 136 (4S), 30.
- 5 **Golberg A**. Environmental exergonomics: sustainability analysis of energy systems considering impacts on eco-

systems services. **Proceedings of ECOS 2015 - the 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems** 2015; June 30-JULY 3, PAU, France. pp: 1-12

- 6 **Golberg A**, Vitkin E, Yakhini Z, Seaweed biorefineries: exergy efficiency, fermentation and sustainability implications; example of potential production of bioethanol from *Kappaphycus alvarezzi* in Philippines. **Proceedings of ECOS 2015 - the 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems** 2015; June 30-JULY 3, PAU, France. pp: 1-12.
- 7 Palatnik, RR, **Golberg A**, Zilberman D, Freer, M. Levin, M. Economics of Natural Resource Utilization: case study of macroalgae biorefinery with two co-products. **Proceedings of EcoMod2018, Venice, Italy, July 4-6, 2018** pp 1-20
- 8 Palatnik, RR, **Golberg A**, Zilberman D, Freer, M. Levin, M. Time to dare and endure: case study of macroalgae two-stage supply Chain With Co-products. **Proceedings of 6th World Congress of Environmental and Resource Economists (WCERE)**. Gothenburg, Sweden. June 25 -29, 2018. pp 1-20
- 9 Blumrosen, G, Weksler, Y, Shkolnik D, **Golberg A**. Efficient Modeling of Plant Short and Long Term Behavioral Responses to a Stimuli. **The 20th IEEE International Conference on BioInformatics And BioEngineering**. Virtual Conference, October 26-28, 2020 USA.

Book Chapters:

1. **Golberg A**, Fischer Y, Rubinsky B. The Use of Irreversible Electroporation in Food Preservation. In Irreversible Electroporation, B. Rubinsky, Ed. Springer Berlin Heidelberg 2009; 273-312
2. **Golberg A**, Rubinsky B. Mass Transfer phenomena in Electroporation. In Transport in Biological Media. S.Becker, Ed. Academic Press, Elsevier 2013; 455-492.
3. Gibot L and **Golberg A**. Electroporation in scars/wound healing and skin response. In Handbook of Electroporation. Miklvacic.D Ed. Springer. 2016; 1-18. DOI 10.1007/978-3-319-26779-1_64-1
4. Robin A and **Golberg A**. Pulsed electric fields in marine biorefineries. In Handbook on electroporation. Miklvacic.D Ed. Springer. 2016: 1-16. DOI 10.1007/978-3-319-26779-1_218-1
5. Gibot L, Kotnik T, **Golberg A**. Electroporation Applications in Wound Healing. In Bioengineering in Wound Healing. A Systems Approach. **Golberg A**, Yarmush M. Ed. World Scientific and Imperial College Press. 2017; 355-377. ISBN: 978-981-3144-57-6.
6. **Golberg A**. Scarless tissue regeneration. In Bioengineering in Wound Healing. A Systems Approach. Golberg A, Yarmush M. Ed. World Scientific and Imperial College Press. 2017; 1-25. ISBN: 978-981-3144-57-6.
7. **Golberg A**, Liberzon, A, Vitkin, E, Yakhini Z. Design and analysis of offshore macroalgae biorefineries In Biofuels from Algae: Methods and Protocols. K. Spilling Ed. Springer. Humana Press. 2018. 1-25.
8. **Golberg A**. Emerging electroporation-based technologies for wound care. In New Technologies in Wound Care. A.Gefen Editor. Elsevier. 2020. 155-170.
9. Polikovskiy M, **Golberg A**. Biorefinery of unique polysaccharides from *Laminaria* sp, *Kappaphycus* sp, and *Ulva* sp.: structure, enzymatic hydrolysis, and bioenergy from released monosaccharides. In Enzymatic Technologies for Marine Polysaccharides. A Trincone Editor. CRC Press. 2019. 164-188.
10. **Golberg A**, Zollmann M, Prabu M, Palatnik, RR. Enabling bioeconomy with offshore macroalgae biorefineries. In Bioeconomy for Sustainable H.B. Singh Editor. Springer-Nature. 2020. 173-200.

Books:

1. **Golberg A**. Bioelectrochemical phenomena: electrolysis and electroporation. Scholar's press 2013, 228 pages. ISBN-10: 3639510690.
2. **Golberg A**. and Yarmush M.L. Editors. Bioengineering in Wound Healing. A Systems Approach. World Scientific and Imperial College Press. 2017, 394 pages. ISBN: 978-981-3144-57-6.
- 3.

Major Conference Presentations and Seminars:

- 1 **Golberg A**. M. Belkin and B. Rubinsky, Irreversible Electroporation for Microbial Control of Drugs in Solution, Electroporation Based Technologies and Treatments 2009. Lubiana, Slovenia. Invited speaker.
- 2 **Golberg A**. Macro Algae as a sustainable biomass source for chemicals and biofuels, Cleantech Open

- National Investor Conference, 2011, San Jose, CA.
- 3 **Golberg A.** Irreversible electroporation in medicine and biotechnology, Invited seminar at AntiCancer Inc., San Diego, CA, 2011
 - 4 **Golberg A.** Electrolyses and electroporation in biotechnology, Harvard Medical School, Boston, 2011
 - 5 **Golberg A.** Distributed Biorefineries for developing countries, MIT Energy Initiative, Energy Club seminar 2012.
 - 6 **Golberg A.** Distributed Biorefineries thermodynamic analyses and optimization, Technion, Mechanical Engineering Faculty, Seminar, Sep 5, 2012.
 - 7 **Golberg A.** Microbial Load control by Intermittently delivered pulsed electric fields, Bio and Food Electrotechnologies, Salerno, Italy, Sep 26-28, 2012, presentation. **Conference travel award**
 - 8 **Golberg A.** Distributed marine biorefineries for developing economies, FONA FORUM for sustainable development, Berlin, Oct 20-24, Germany, 2012, poster. **Conference travel award**
 - 9 **Golberg A.** Irreversible electroporation in medicine, UIC, Department of Biomedical Engineering, Chicago, Nov.5, 2012. Invited seminar.
 - 10 **Golberg A,** Linshiz G, Koudritsky M, Chemodanov A, Hillson NJ. Distributed marine biorefineries for developing economies, ASME Congress and Exhibition, Houston, Nov 9-15, TX, 2012, presentation.
 - 11 **Golberg A,** Linshiz G, Koudritsky M, Chemodanov A, Hillson NJ . Distributed marine biorefineries for developing economies, Eilat-Eilat Renewable energy conference, Eilat, Nov 28-30, Israel, 2012, poster.
 - 12 **Golberg A,** Broelsch GF, Bohr S, Mihm MC, Austen WG, Albadawi H, Watkins MT, Yarmush ML. Non-thermal, irreversible electroporation (IRE) allows for controlled ablation of cellular compartments followed by scarless regeneration of skin in a rat model, Harvard Surgery Day, 2013, poster.
 - 13 **Golberg A,** Broelsch GF, Bohr S, Mihm MC, Austen WG, Albadawi H, Watkins MT, Yarmush ML. Towards tissue regeneration using irreversible electroporation. **Gordon Research Seminar. Invited Speaker.** June 2013.
 - 14 Vitkin E, Linshiz G, **Golberg A,** Hillson NJ, Yarmush ML, Keasling J, Yakhini Z. Computational modeling of two-step bioethanol production: marine macroalgae *Ulva Lactuca* study. Poster and presentation. IBS13 conference. Beer-Sheva, Israel, June 2013.
 - 15 Brölsch GF, **Golberg A,** Bohr S, Mihm MC Jr, Albadawi H, Watkins MT, Yarmush ML, Austen WG Jr. LOP35: Scarless regeneration of rat skin following ablation by non-thermal irreversible electroporation. *Plastic and Reconstructive Surgery.* 2013 132(2): 108.
 - 16 Khan S, **Golberg A,** Brölsch GF, Bohr S, Mihm MC Jr, Albadawi H, Watkins MT, Austen WG Jr, Yarmush ML. Non-Thermal, Irreversible Electroporation: A Novel Tool for Scarless Skin Regeneration. Massachusetts Chapter of the American College of Surgeons 2013 Massachusetts Chapter of the American College of Surgeons Poster Presentation. December 2013.
 - 17 **Golberg A,** Vitkin E, Linshiz G, Ahma-Khan S, Hillson NJ, Yakhini Z, Yarmush ML, Proposed Design of Distributed Marine Biorefineries: Thermodynamics, Technology, and Sustainability Implications for Developing economies. ISES Abraham Kogan Session Lecture, October 7, 2013. Technion Israel.
 - 18 **Golberg A,** Khan S, Broelsch GF, Bohr S, Mihm MC, Austen WG, Albadawi H, Watkins MT, Yarmush ML. “Non-Thermal, Pulsed Electric Field Cell Ablation: A Novel Tool for Regenerative Medicine and Scarless Skin Regeneration. *Galil Biomedicine IV.* October 8, 2013. Khiryat Shmona, Israel.
 - 19 **Golberg A,** Khan S, Broelsch GF, Bohr S, Mihm MC, Austen WG, Albadawi H, Watkins MT, Yarmush ML. Non-Thermal, Pulsed Electric Field Cell Ablation: A Novel Tool for Regenerative Medicine and Scarless Skin Regeneration. FISEB (ILANIT) Congress 7. February 11, 2014. Eilat, Israel. Poster Session.
 - 20 **Golberg A,** Broelsch GF, Vecchio D, Khan S, Hamblin MR, Austen WG, Sheridan RL, Yarmush ML. Pulsed electric fields for burn wound disinfection in the murine model. American Burn Association, annual conference. Oral presentation. 25 March 2014, Boston MA. Abstract in Supplement to *Journal of Burn Care & Research,* 35(5):S98. 2014.
 - 21 **Golberg A,** Sheridan RL, Austen WJ Jr, Yarmush ML. Pulsed electric fields for wound management. 10th Early Stage Life Science Conference. April 10, 2014. Boston, MA. Oral presentation. Abstract in Proceedings page 32.
 - 22 **Golberg A.** Energy Efficient Seaweed-based Biorefineries for Developing Countries, Proceedings of Electrobioref 2015. January 28, 2015, Compiègne, France.
 - 23 **Golberg A.** Rational design of seaweed based biorefineries. ISES meeting. Ben Gurion University. February 16, 2015. Israel.
 - 24 **Golberg A.** Energy Efficient Marine biorefineries for all inclusive bioeconomy. Food in the new era, Israel Food Producers Association conference. Ramat Gan, June 15, 2015. Israel.
 - 25 **Golberg A,** Bruinsma B, Uygun B, Yarmush ML. Tissue heterogeneity in structure and conductivity contribute to cell survival during irreversible electroporation ablation by “electric field sinks”. 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies. Portoroz, September 6-10. Slovenia.

- 26 **Golberg A**, Rabinowitch HD, Rubinsky B. Galvanic apparent internal impedance for electroporation imaging. 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies. Portoroz, September 6-10. Slovenia. 2015
- 27 Khan S, Blumrosen G, Vecchio D, **Golberg, A**, McCormack, MC, Yarmush ML, Hamblin MR, Austen WG. Eradication of multidrug-resistant pseudomonas biofilm with pulsed electric fields. 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies. Portoroz, September 6-10. Slovenia. 2015
- 28 Fernand F, Sack M, Muller G, **Golberg A**. Energy efficient drying of macroalgae *Ulva* with pulsed electric fields. 1st World Congress on Electroporation and Pulsed Electric Fields in Biology, Medicine and Food & Environmental Technologies. Portoroz, September 6-10. Slovenia.
- 29 **Golberg, A.**, Vitkin E, Yakhini Z. Computer-assisted fermentation design of complex macroalgae biomass into bioethanol. Israel society of biotechnology engineering. Tel Aviv. December 13, 2015. Poster.
- 30 Lo W, Villiger M, **Golberg A**, Khan S, Austen W, Yarmush M, Bouma B. Non-invasive volumetric imaging of hypertrophic scars in vivo. SPIE Photonics West 2015 - Photonics in Dermatology and Plastic Surgery. 2015.
- 31 **Golberg, A**. Energy Efficient Biomass Processing with Pulsed Electric Fields for Bioeconomy and Sustainable Development. EU JRC workshop on bioeconomy. HaGoshrim, Israel. December 17. 2015. **Invited speaker.**
- 32 **Golberg A**. Marine biorefineries for sustainable infrastructures. Weisman Institute of Science. Seminar Department of Earth and Planetary Sciences. May 2016.
- 33 **Golberg A**. Thermochemical hydrolysis of macroalgae *Ulva* for biorefinery: physical and chemical parameters optimization. Israel Sustainable Energy Society Annual Meeting. April 2016. Tel Aviv.
- 34 **Golberg A**. Marine biorefineries for sustainable infrastructures in Israel. Presenting to the Israel committee for coast and marine territories planning. June 2016.
- 35 **Golberg, A**. Environmental Bioengineering solving energy problems. Tsinghua-TAU XIN Center Workshop on Scientific Frontiers, Beijing, September 2016.
- 36 **Golberg, A**. Spectroscopical methods for carbohydrate profiling of green macroalgae *Ulva*. Phycomorph meeting on fundamentals of macroalgae morphology. Limassol, Cyprus, September 2016.
- 37 **Golberg, A**. Environmental Bioengineering for Food and Energy Security. Food Security Workshop 2016. Pilani, India. November 2016.
- 38 **Golberg, A**. Offshore marine biorefineries. Invited lecture. Weismann Institute of Science Renewable Energy initiative. February 2017.
- 39 **Golberg, A**. Offshore marine biorefinery in Israel a consolidated approach to support bioeconomy and blue growth. Marine Offshore Biorefineries workshop. Tel Aviv University. May 2017.
- 40 **Golberg, A**. Electroporation and Pulsed Electric field technologies in marine macroalgae biorefineries. 7th International Conference on Algal Biomass, Biofuels and Bioproducts. 18-21 June 2017. Miami, FL. USA Elsevier Conference. **Invited Speaker.**
- 41 **Golberg A**. Polikovsky M, Sack M. Allergenicity assessment macroalgae *Ulva* protein derived with pulsed electric fields. 2nd World Congress on Electroporation, Pulsed Electric Fields in Biology, Medicine, Food and Environmental Technologies. Norfolk. VA. USA. September 24-28, 2017.
- 42 **Golberg, A**. Macroalgae Biorefinery for Bioeconomy. 1st Conference on BioEconomy. Emek Izrael College. Afula. Israel. March 28. 2018.
- 43 **Golberg, A**. Production of Macroalgae for Chemicals, Materials and Fuels. Mediterranean Sea: Natural, Strategic and Economic Resource. IDC Herzelia. Herzelia. Israel. May 1. 2018
- 44 **Golberg, A**. Can offshore grown macroalgae derived proteins and starch address the soaring demands for commodities. 8th International Conference on Algal Biomass, Biofuels and Bioproducts. 11-13 June 2018. Seattle, WA. USA Elsevier Conference. **Invited Speaker.**
- 45 **Golberg, A**. Electroporation and pulsed electric fields for regenerative medicine. Tsinghua University Medical School. Beijing, China. October 2018.
- 46 **Golberg, A**. Low-cost pulsed electric field devices enable food-energy-water nexus with macroalgae biorefinery. Tsinghua-TAU XIN Center Conference, Beijing, China. October 2018.
- 47 **Golberg, A**. Non-thermal, Partial Irreversible Electroporation for Burn Wound Therapies and Skin Regeneration. Innovations in Wound Healing. 6-12 December 2018. Key West, USA. **Invited Speaker. IWH Faculty.**
- 48 **Golberg, A**. Offshore marine biorefineries for the production of sustainable food, chemicals and fuels in India Academic Dialogues: Political & Socio-Cultural Crossings Joint International Conference. 17 January 2019. Tel Aviv. Israel.
- 49 **Golberg, A**. Free-floating offshore cultivation of *Ulva* sp. Phycomorph conference. Brussels, Belgium, March 13-14, 2019

- 50 **Golberg, A.** Halophyte biorefinery for production of bioplastic from seaweeds. 3EAT conference. Emek Izrael College. Afula. Israel. March 17. 2019
- 51 **Golberg, A.** Electroporation for wound healing and regenerative medicine. Meir Hospital. Department of Plastic Surgery. Israel. April 16, 2019.
- 52 **Golberg A.** Offshore marine biorefineries for the production of biofuels in Israel. 26th International Seaweed Association meeting. Jeju. Korea. April 28-May 3. 2019. **Invited speaker.**
- 53 **Golberg A.** Offshore biomass production for biofuels. Israel Society of Ecology and Environmental Sciences Annual Conference. Tel Aviv. June 19, 2019.
- 54 **Golberg. A.** Reducing the environmental impact of waste chicken meat with pulsed electric fields driven extraction of valuable compounds. 3rd World Congress on Electroporation, Pulsed Electric Fields in Biology, Medicine, Food and Environmental Technologies. Toulouse. France. September 3-6, 2019
- 55 **Golberg A.** Levkov K. Towards sustainable marine biorefineries: macroalgae continuous fractionation with electric fields and mechanical press. The 12th European congress of chemical engineering Florence 15-19 September 2019.
- 56 **Golberg A.** Pulsed electric field and Electroporation technologies in wound healing. VIII Latin American Conference on Biomedical Engineering and XLII National Conference on Biomedical Engineering. October 2-5, 2019, Cancún, México. **Plenary speaker.**
- 57 **Golberg A.** Bioremediation with marine macroalgae: Multi-Scale Dynamic Modeling of intensive offshore Ulva sp. cultivation for nitrogen sequestration. Multiscale and Multiphysics Modeling and Computation Analysis, Environmental Modeling. BITS Pilany, Pilany, India. October 17, 2020.

Patents

- 1 Rubinsky B, Belkin M, **Golberg A**, Sverdlik A. WIPO Patent Application WO/2010/113150. An apparatus, system and method for preventing biological contamination to materials during storage using pulsed electric energy.
- 2 **Golberg A**, Rubinsky B. United States Application 20130197425. Current cage for reduction of non-target tissue exposure to electric fields in electroporation based treatment.
- 3 **Golberg A**, Yarmush ML, Broelsch F, Sheridan R, Austen WGJr. PCT patent application. Device for pulsed electric field skin treatment.
- 4 **Golberg A**, Yarmush ML, Broelsch F, Sheridan R, Austen WGJr Intermittently Delivered Pulsed Electric Fields For Cell Density And Biofilm Formation Control In Wounds. Provisional application.
- 5 Khan, S, **Golberg A**, Yarmush ML, Austen WGJr. PEF for Implant Disinfection. Provisional application.
- 6 Khan, S, **Golberg A**, Yarmush ML, Austen WGJr. Pulsed Electric Fields for Hair Growth Induction. Provisional application.
- 7 **Golberg A.** Pulsed electric field device for phytochemicals extraction from macroalgae. Provisional application.
- 8 Tali Konry, **Golberg, A.**, Yarmish ML. US Patent 20150346201 System and method for picoliter volume microfluidic diagnostics.
- 9 Oklu Rahmi, Yarmush Martin, **Golberg A**, PCT/US2014/034198, WO 2015076864 A1. Methods and devices for treating and preventing conditions of tubular body structures
- 10 Levkov K, **Golberg A.** Regulated storage capacitor device and method. WO 2019/224819 A1
- 11 Chemodanov, **Golberg A**, Liberzon A. "Device and methods for free floating macroalgae cultivation offshore". PCT
- 12 Golberg A, Sheveridov J, Yakhini Z. Molecular Harvesting with electroporation for tissue profiling. PCT.

Business competitions

- 1 Global Clean Tech Open Business Competition. Led the team, developed the techno-economical analyses for small scale biorefineries for the production of carbon neutral fuels and zero emission electricity from macro algae. The team passed to semi-finals in California regional competition. October 2011.
- 2 Berkeley B-Plan competition. Led the team, wrote a business plan with techno-economical analyses for the production of chemicals and fuels from algae. The team passed to the competition finals. April 2011.
- 3 Made for China. Global competition of sustainable technologies for China, USA finalist, October 2011. Proposal "Small scale biorefineries for rural China biofuel production".

Graduated Students and Trainees

PostDoc

Kapilkumar Ingle, PhD	2015-2016	Environmental Studies
Xiaoxiang Li, MD/PhD	2015-2016	Surgery
Mengjie Wu, DMD	2017-2018	Surgery
Meghanath Prabhu, PhD	2017-2019	Environmental Biotechnology
Amrita Singh, PhD	2019-2021	Cancer diagnostics

PhD students

Mark Polikovaky	2015-2020	Environmental studies
Arthur Robin	2016-2021	Environmental Studies

MSc

Shai Shefer, 2014-2016	Environmental Studies
Tal Granot, 2015-2016	Electrical Engineering
Avihay Ashush, 2014-2015	Electrical Engineering
Oz Habiby 2015-2017	Mechanical Engineering
Semion Greiserman 2016-2018	Environmental Engineering
Andrey Eithan Rubin 2016-2018	Environmental Studies
Omri Nahor 2016-2019	Environmental Studies
Noam Rossiansky 2014-2019	Environmental Studies
Amihai Gillis 2016-2019	Environmental Studies
Efraim Steinbruch 2018-2020	Mechanical Engineering
Bender Barak 2016-2020	Environmental Studies

Media coverage**Boiled potato battery project**

Reuters: <http://www.reuters.com/news/video/story?videoId=127046608>

Al-Jaseera: <http://www.youtube.com/watch?v=Izfs2keZnw4>

Russian First channel: <http://www.1tv.ru/news/other/158559>

Project implementation in the developing countries:

<http://www.scidev.net/en/new-technologies/news/potato-and-plantain-batteries-show-promise-1.html>

Marine Biorefineries

<http://www.scidev.net/en/climate-change-and-energy/renewable-energy/news/small-seaweed-refineries-could-meet-transport-needs-1.html>

<https://www.aftau.org/news-page-biology--evolution?&storyid4700=2380&nscs4700=3>

Burns disinfection using pulsed electric fields

<http://www.massgeneral.org/about/pressrelease.aspx?id=1707>

Pulsed Electric Fields for milk preservation in developing countries

<http://www.sciencedaily.com/releases/2015/03/150324111653.htm>

Skin Rejuvenation with Pulsed Electric Fields

<https://www.aftau.org/news-page-computers--technology?=&storyid4702=2209&ncs4702=3>

Bioplastic

<https://marketbusinessnews.com/sustainable-plastics-biodegradable/192619/>

<https://www.aftau.org/news-page-environment--ecology?&storyid4703=2427&ncs4703=3>