

RESUME

Dec 2022

1. PERSONAL DETAILS

Full Name: Omer Yehezkeli

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ORCID ID: 0000-0001-7588-6705

2. ACADEMIC DEGREES

2009-2014 Ph.D., Chemistry, The Hebrew University of Jerusalem

2006-2008 M.Sc., Chemistry, The Hebrew University of Jerusalem

2003-2006 B.Sc., Chemistry (minor, Structural and Molecular Biochemistry), The Hebrew University of Jerusalem

3. ACADEMIC APPOINTMENTS

2017 (Oct) Assistant Prof. Department of Biotechnology & Food Engineering, Technion, Israel Institute of Technology Haifa, Israel.

2013-2017 Post-Doc, Research Associate, Department of Chemical & Biological Engineering, University of Colorado, Boulder

4. PROFESSIONAL EXPERIENCE (outside academia)

2008-2010 R&D at *Sensogene* (for Medingo)-implanted amperometric glucose biosensors

5. RESEARCH INTERESTS (briefly)

Renewable Energy, (Photo)Bioelectrochemistry, Nano-bio-hybrids, Nitrogenase, Cyborg Bacteria, Biosensors, Biocatalysis

6. TEACHING EXPERIENCE

- Lecturer, Seminar in Nanotechnology (648001, one class) Interfacing Nano Elements with Biological Ones; *Can We Create Biotic/Abiotic Organisms?*
- Lecturer, Methods in Chemical Analysis for Biotechnology and Food Engineering (064324), Undergraduate level, compulsory
- Lecturer, Nano-Bio-Hybrids and Biosensors-Principles and Applications, Graduate level, new course developed including hands-on laboratory exercises, elective.
- Teaching Assistant, Chemistry Labs (undergraduate), The Hebrew University of Jerusalem
- Teaching Assistant, Organic Chemistry (undergraduate), The Hebrew University of Jerusalem
- Teaching Assistant, General Chemistry Labs (undergraduate), Jerusalem College of Engineering

7. TECHNION ACTIVITIES

2021 Technion Human Health Initiative, THHI center, Panel member.

2021-present Mor-Tech Committee, academic advisor.

2021-present Technion Energy program council.

2022 Technion Sustainability Center, Panel member

- 2022- Technion Reznik Catalysis and Sustainability Center - Panel member.
 2020-present Department representative in the Grand Technion Energy program.

8. DEPARTMENTAL ACTIVITIES

- 2018-2019 Coordinator of department seminars
 2020 Secretary of the department council
 2019-present Coordinator of high-school visits, labs and lectures
 2022- present Responsible for faculty open days activities

9. PUBLIC PROFESSIONAL ACTIVITIES

- 2023-2025 Vice chair of division 2, Bioelectrochemistry, ISE.

Active reviewer:

2019-Present: Journal of American Chemical Society, Nature Communication, Advanced science, ACS sensors Advanced Energy Materials, Angew. Chem. In Ed. (*top 10% of reviewers for Angewandte Chemie*), ACS Applied Nano Materials, Journal of Electroanalytical Chemistry, ChemCatChem, ChemElectroChem, Bioelectrochemistry, Chemical Engineering Journal, Nanomaterials, Israel Journal of Chemistry, Biomolecules, Sensors, Materials, Nanomaterials, Catalysis communication, Catalysts, Biosensors,
 2017-2018: Nature Communication, Bioelectrochemistry, CO₂ Utilization, Sensors, Thin Solid Films, Light: Science & Applications, (Nature), Catalysis Communication
 2013-2016: Journal of American chemical society, Fuel Cells, Sensors, Materials, Nanomaterials

Grants review

ISF- Israel-Singapore program 2019, ISF “killCorona” program, M.ERA.NET (EU Consortium pre-submitting) 2020, M.ERA.NET (EU Consortium pre-submitting) 2021

Editorial Board

- Biosensors, MDPI
- Guest Editor - Special issue at Catalysts, MDPI

10. MEMBERSHIP IN PROFESSIONAL SOCIETIES

Israel Society for Biotechnology Engineering (ISBE)
 International electrochemical society (ISE)
 Israel chapter-ISE (IL-ISE)
 American chemical society (ACS)
 Bioelectrochemical society (BES)
 Israel chemical society (ICS)
2023-2025 vice chair of division 2, Bioelectrochemistry, ISE.

11. FELLOWSHIPS, AWARDS AND HONORS

- **2022** Excellent publication in leading scientific journals, Grand Technion Energy Program (3500\$) “*Protein-Mediated Biosynthesis of Semiconductor Nanocrystals for Photocatalytic NAD(P)H Regeneration and Chiral Amine Production*”
- **2021** Excellent publication in leading scientific journal, Grand Technion Energy Program (5000\$). “*Tailoring QDs Sizes for Optimal Photoinduced Catalytic Activation of Nitrogenase*”

- **2020** Excellent publication in leading scientific journal, Grand Technion Energy Program “*Photosynthesis Z-Scheme Biomimicry: Photosystem I/BiVO₄ Photo-Bioelectrochemical Cell for Donor-Free Bias-Free Electrical Power Generation*” (5000\$).
- **2016** Catalysis and Surface Science Super Group (CSSSG), Speaker of the Year.
- **2015** The American Institute of Chemist Post-Doctoral Award.
- **2011-2013** The Levi Eshkol doctoral scholarship for scientific achievement, the Israeli Ministry of Science and Technology.
- **2009, 2011** Jacob Laivand Award for Alternative Energy Research.

12. GRADUATE STUDENTS

Completed MSc theses

- **Dina Mukha (Currently:** Supervisor - SMA Medical Labs, Philadelphia, Pennsylvania, US).
Enzyme-Based Photoelectrochemical System for Electrical Power Generation
- **Oren Bachar** (Ph.D. direct track).
Synthesis of Self-assembled Metal Nanoparticles Using Proteins Cages
- **Matan Meirovich** continued to Ph.D. direct track
Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes

PhD theses in progress

- **Oren Bachar** (direct track), **Expected graduation 2023**
Synthesis of Self-assembled Metal Nanoparticles Using Protein Cages in Living Systems
- **Matan Meirovich** (direct track), **Expected graduation 2023**
Nitrogenase-Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes
- **Nidaa Herzallh - Expected graduation in Jan, 2023**
Photo-bioelectrochemical Configurations for Electrical Power Generation
- **Roy Cohen Expected graduation 2023**
Flavoenzyme-based amperometric biosensors and biofuel cells applications
- **Guy Levin (co-advisor with Prof. Gadi Schuster) Expected graduation 2023**
The mechanism of photoinhibition resistance and its use for photosynthesis-based electricity production

MSc Theses in progress

- **Mor Shemesh (shifting to PhD direct track)**
Conversion of Cellulose Biomass into Electrical Power Using Cellulase Enzymes in Photo-Bio-electrochemical Cell
- **Yara Zeibaq (expected graduation, 2023)**
Stable Protein I Hemin Complex as Peroxidase Mimicking Artificial Enzyme
- **Dewei Lin (co advisor with Prof. Peng Xu, GTIT, expected graduation 2023)**
Harnessing sulfur house-keeping metabolism to produce genetically tunable

nanoparticles in Yarrowia lipolytica

Students Prizes and Awards

Nidaa Herzallh:

2022 1st place in the posters competition at the Grand Technion Energy Program (GTEP), Technion.

2022 2nd place in the posters competition at the Israel Electrochemical Society (ISEL), Ariel University.

2021 1st place in the posters competition at the Israel Electrochemical Society (ISEL), Bar-Ilan University, Tel Aviv.

Roy Cohen:

2022 Grand Technion Energy Program (GTEP) annual research day - 2nd place (shared) for poster presentation.

2021 Jacobs foundation scholarship

2020 paper of the month - Nov' 2020

Mor Shemesh:

2022 Award for excellence poster presentations, Biotechnology and Food engineering research day.

Oren Bachar:

2022 Russell Berrie Nanotechnology Institute 1st Prize for excellence in Nanoscience & Nanotechnology.

2022 Russell Berrie Nanotechnology Institute Excellence Fellowship.

2021 Best Ph.D. poster award in Research Day, Department of Biotechnology and Food Engineering, Technion, Israel.

2021 Chemical Science Outstanding Poster Prize at the Chemical Science Symposium: Biohybrid Approaches to Sustainable Energy Conversion.

2020 Zeff, Fine and Daniel Foundations Excellence Scholarship.

Matan Meirovich:

2022 Award for excellence poster presentations, Biotechnology and Food engineering research day.

2021 "Levtzion Scholarships for outstanding doctoral students from the periphery (VATAT)" award.

2021 Award for "published paper of the month, faculty of Biotechnology and Food engineering, 2021.

2019 Award for excellence poster presentations, Linking FoodTech Nutrition & Health, world food day, October 29, 2019, Technion, Haifa, Israel.

2018 "Leonard and Diane Sherman Interdisciplinary Graduate school Fellowship" award.

14. RESEARCH GRANTS

Competitive

- 2020-2023, **ISF**, *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic and Photo-bioelectrocatalytic Processes* (304,000\$)
- 2019, **ISF** - Instruments and setup matching (234,000\$).
- 2021-2023 **Israel Ministry of Energy** - *Biotic/abiotic photo-bioelectrochemical cells* (217,000\$)

- 2021, **Israel Innovation Authority, Kamin Program**, *Development of FAD/FMN dependent GDH and LDH Bioanodes for Analyte Detection and the Construction of Biofuel Cell Devices* 134,000\$
- 2023-2025 **Israel Ministry of Energy** *Conversion of Biomass or Bioplastic Waste (PLA) into Fuels or Electrical Power Using Biotic-Abiotic Configurations*~200,000\$ (OY principle investigator with co-investigator, Prof. Ayelet Fishman)

Industrial and other sources

- **2019**, SAEF, Nano-Bio Hybrid Systems for Ammonia or Fuel Generation (50,000\$).
- **2018**, Spira Nanotechnology Grant, Enzyme-Based Photoelectrochemical Systems for Photo-Biocatalytic Processes (20,000\$)
- **2019**, NEVET- Grand Technion Energy Program (GTEP), 2019, Unbiased photoelectrochemical cell based on BiVO₄/Mn₁₂O₁₂(O₂CR)₁₆(H₂O)₄ photoanode and Bilirubin oxidase/ABTS/polydopamine cathode. Shared with **Prof. Galia Maayan**, Chemistry (30,000\$)
- **2020**, NEVET (received continuation)- Grand Technion Energy Program (GTEP), 2020, Unbiased photoelectrochemical cell based on BiVO₄/ Mn₁₂O₁₂(O₂CR)₁₆(H₂O)₄ photoanode and Bilirubin oxidase/ABTS/polydopamine cathode. Shared with **Prof. Galia Maayan**, Chemistry (20,000\$)

15. PUBLICATIONS

15.1 Theses

- **O. Yehezkeli**, *Electrical Communication between Redox Enzymes and Electrodes for Biosensors and Biofuel Cells Applications*. M.Sc. Thesis, The Hebrew University of Jerusalem, November 2008, (under the supervision of Prof. Itamar Willner).
- **O. Yehezkeli**. *Electrical communication between proteins and electrodes, or metal nanoclusters, for bio-catalytic, bio-electrocatalytic and bioelectrochemical applications* The Hebrew University of Jerusalem, December 2013, (under the supervision of Prof. Itamar Willner).

Refereed papers in professional journals

- (1) Yan, Y.-M.; **Yehezkeli, O.**; Willner, I. Integrated, Electrically Contacted NAD(P)⁺-Dependent Enzyme–Carbon Nanotube Electrodes for Biosensors and Biofuel Cell Applications. *Chemistry – A European Journal* **2007**, *13* (36), 10168–10175. <https://doi.org/10.1002/chem.200700806>.
- (2) Yan, Y.-M.; Tel-Vered, R.; **Yehezkeli, O.**; Cheglakov, Z.; Willner, I. Biocatalytic Growth of Au Nanoparticles Immobilized on Glucose Oxidase Enhances the Ferrocene-Mediated Bioelectrocatalytic Oxidation of Glucose. *Advanced Materials* **2008**, *20* (12), 2365-+. <https://doi.org/10.1002/adma.200703128>.
- (3) Tel-Vered, R.; **Yehezkeli, O.**; Yildiz, H. B.; Wilner, O. I.; Willner, I. Photoelectrochemistry with Ordered CdS Nanoparticle/Relay or Photosensitizer/Relay Dyads on DNA Scaffolds. *Angewandte Chemie International Edition* **2008**, *47* (43), 8272–8276. <https://doi.org/10.1002/anie.200802590>.
- (4) Yan, Y.-M.; Baravik, I.; **Yehezkeli, O.**; Willner, I. Integrated Electrically Contacted Glucose Oxidase/Carbon Nanotube Electrodes for the Bioelectrocatalyzed Detection of Glucose. *Journal of Physical Chemistry C* **2008**, *112* (46), 17883–17888. <https://doi.org/10.1021/jp805637e>.

- (5) Bahshi, L.; Frascioni, M.; Tel-Vered, R.; **Yehezkeli, O.**; Willner, I. Following the Biocatalytic Activities of Glucose Oxidase by Electrochemically Cross-Linked Enzyme-Pt Nanoparticles Composite Electrodes. *Analytical Chemistry* **2008**, *80* (21), 8253–8259. <https://doi.org/10.1021/ac801398m>.
- (6) **Yehezkeli, O.**; Yan, Y.-M.; Baravik, I.; Tel-Vered, R.; Willner, I. Integrated Oligoaniline-Cross-Linked Composites of Au Nanoparticles/Glucose Oxidase Electrodes: A Generic Paradigm for Electrically Contacted Enzyme Systems. *Chem. Eur. J.* **2009**, *15* (11), 2674–2679. <https://doi.org/10.1002/chem.200801609>.
- (7) Piperberg, G.; Wilner, O. I.; Yehezkeli, O.; Tel-Vered, R.; Willner, I. Control of Bioelectrocatalytic Transformations on DNA Scaffolds. *Journal of the American Chemical Society* **2009**, *131* (25), 8724+. <https://doi.org/10.1021/ja900718m>.
- (8) **Yehezkeli, O.**; Moshe, M.; Tel-Vered, R.; Feng, Y.; Li, Y.; Tian, H.; Willner, I. Switchable Photochemical/Electrochemical Wiring of Glucose Oxidase with Electrodes. *Analyst* **2010**, *135* (3), 474–476. <https://doi.org/10.1039/b927009d>.
- (9) **Yehezkeli, O.**; Wilner, O. I.; Tel-Vered, R.; Roizman-Sade, D.; Nechushtai, R.; Willner, I. Generation of Photocurrents by Bis-Aniline-Cross-Linked Pt Nanoparticle/Photosystem I Composites on Electrodes†. *J. Phys. Chem. B* **2010**, *114* (45), 14383–14388. <https://doi.org/10.1021/jp100454u>.
- (10) **Yehezkeli, O.**; Ovits, O.; Tel-Vered, R.; Raichlin, S.; Willner, I. Reconstituted Enzymes on Electropolymerizable FAD-Modified Metallic Nanoparticles: Functional Units for the Assembly of Effectively “Wired” Enzyme Electrodes. *Electroanalysis* **2010**, *22* (16), 1817–1823. <https://doi.org/10.1002/elan.201000197>.
- (11) **Yehezkeli, O.**; Raichlin, S.; Tel-Vered, R.; Kesselman, E.; Danino, D.; Willner, I. Biocatalytic Implant of Pt Nanoclusters into Glucose Oxidase: A Method to Electrically Wire the Enzyme and to Transform It from an Oxidase to a Hydrogenase. *Journal of Physical Chemistry Letters* **2010**, *1* (19), 2816–2819. <https://doi.org/10.1021/jz1011324>.
- (12) **Yehezkeli, O.**; Tel-Vered, R.; Reichlin, S.; Willner, I. Nano-Engineered Flavin-Dependent Glucose Dehydrogenase/Gold Nanoparticle-Modified Electrodes for Glucose Sensing and Biofuel Cell Applications. *Acs Nano* **2011**, *5* (3), 2385–2391. <https://doi.org/10.1021/nn200313t>.
- (13) Raichlin, S.; Yehezkeli, O.; Tel-Vered, R.; Willner, I. Glucose Oxidase-Mediated Reduction Processes: H₂ Evolution, Hydrogenation of Acetylene, and Reduction of NO₃-by Glucose. *Chemcatchem* **2011**, *3* (12), 1885–1888. <https://doi.org/10.1002/cctc.201100247>.
- (14) Wilner, O. I.; Orbach, R.; Henning, A.; Teller, C.; Yehezkeli, O.; Mertig, M.; Harries, D.; Willner, I. Self-Assembly of DNA Nanotubes with Controllable Diameters. *Nature Communications* **2011**, *2*, 540. <https://doi.org/10.1038/ncomms1535>.
- (15) **Yehezkeli, O.**; Tel-Vered, R.; Wasserman, J.; Trifonov, A.; Michaeli, D.; Nechushtai, R.; Willner, I. Integrated Photosystem II-Based Photo-Bioelectrochemical Cells. *Nat Commun* **2012**, *3*, 742. <https://doi.org/10.1038/ncomms1741>.
- (16) Liu, X.; Aizen, R.; Freeman, R.; Yehezkeli, O.; Willner, I. Multiplexed Aptasensors and Amplified DNA Sensors Using Functionalized Graphene Oxide: Application for Logic Gate Operations. *ACS NANO* **2012**, *6* (4), 3553–3563. <https://doi.org/10.1021/nn300598q>.
- (17) Efrati, A.; Yehezkeli, O.; Tel-Vered, R.; Michaeli, D.; Nechushtai, R.; Willner, I. Electrochemical Switching of Photoelectrochemical Processes at CdS QDs and Photosystem I-Modified Electrodes. *ACS NANO* **2012**, *6* (10), 9258–9266. <https://doi.org/10.1021/nn3037286>.
- (18) Sharon, E.; Liu, X.; Freeman, R.; Yehezkeli, O.; Willner, I. Label-Free Analysis of Thrombin or Hg₂⁺ Ions by Nucleic Acid-Functionalized Graphene Oxide Matrices Assembled on Field-Effect Transistors. *Electroanalysis* **2013**, *25* (4), 851–856. <https://doi.org/10.1002/elan.201200581>.
- (19) **Yehezkeli, O.**; Tel-Vered, R.; Michaeli, D.; Nechushtai, R.; Willner, I. Photosystem I (PSI)/Photosystem II (PSII)-Based Photo-Bioelectrochemical Cells Revealing

- Directional Generation of Photocurrents. *Small* **2013**, *9* (17), 2970–2978. <https://doi.org/10.1002/sml.201300051>.
- (20) Trifonov, A.; Yehezkeli, O.; Tel-Vered, R.; Willner, I. PH-Switchable Redox Reactions and Bioelectrocatalytic Processes Using Au Nanoparticles-Modified Electrodes. *Electroanalysis* **2013**, *25* (7), 1605–1612. <https://doi.org/10.1002/elan.201300119>.
- (21) Liu, X.; Wang, F.; Aizen, R.; Yehezkeli, O.; Willner, I. Graphene Oxide/Nucleic-Acid-Stabilized Silver Nanoclusters: Functional Hybrid Materials for Optical Aptamer Sensing and Multiplexed Analysis of Pathogenic DNAs. *Journal of the American Chemical Society* **2013**, *135* (32), 11832–11839. <https://doi.org/10.1021/ja403485r>.
- (22) Trifonov, A.; Herkendell, K.; Tel-Vered, R.; Yehezkeli, O.; Woerner, M.; Willner, I. Enzyme-Capped Relay-Functionalized Mesoporous Carbon Nanoparticles: Effective Bioelectrocatalytic Matrices for Sensing and Biofuel Cell Applications. *ACS NANO* **2013**, *7* (12), 11358–11368. <https://doi.org/10.1021/nn405218x>.
- (23) **Yehezkeli, O***; de Oliveira, D.; Cha, J. Electrostatically Assembled CdS-Co₃O₄ Nanostructures for Photo-Assisted Water Oxidation and Photocatalytic Reduction of Dye Molecules. *SMALL* **2015**, *11* (6), 668–674. <https://doi.org/10.1002/sml.201401490>.
- (24) Ma, K.; Yehezkeli, O.; Domaille, D. W.; Funke, H. H.; Cha, J. N. Enhanced Hydrogen Production from DNA-Assembled Z-Scheme TiO₂-CdS Photocatalyst Systems. *Angew. Chem. Int. Ed.* **2015**, *54* (39), 11490–11494. <https://doi.org/10.1002/anie.201504155>.
- (25) **Yehezkeli, O***; Harguindey, A.; Domaille, D.; He, L.; Cha, J. Synthesis and Phase Transfer of Well-Defined BiVO₄ Nanocrystals for Photocatalytic Water Splitting. *RSC ADVANCES* **2015**, *5* (72), 58755–58759. <https://doi.org/10.1039/c5ra10454h>.
- (26) **Yehezkeli, O***; Bedford, N. M.; Park, E.; Ma, K.; Cha, J. N. Semiconductor-Based, Solar-Driven Photochemical Cells for Fuel Generation from Carbon Dioxide in Aqueous Solutions. *ChemSusChem* **2016**, *9* (22), 3188–3195. <https://doi.org/10.1002/cssc.201601105>.
- (27) Ma, K.; Yehezkeli, O.; Park, E.; Cha, J. N. Enzyme Mediated Increase in Methanol Production from Photoelectrochemical Cells and CO₂. *ACS Catal.* **2016**, *6* (10), 6982–6986. <https://doi.org/10.1021/acscatal.6b02524>.
- (28) Hafenstine, G. R.; Ma, K.; Harris, A. W.; Yehezkeli, O.; Park, E.; Domaille, D. W.; Cha, J. N.; Goodwin, A. P. Multicatalytic, Light-Driven Upgrading of Butanol to 2-Ethylhexenal and Hydrogen under Mild Aqueous Conditions. *ACS Catal.* **2017**, *7* (1), 568–572. <https://doi.org/10.1021/acscatal.6b03213>.
- (29) Ganguly, S.; Paul, S.; Yehezkeli, O.; Cha, J.; Caruthers, M. Boranephosphonate DNA-Mediated Metallization of Single-Walled Carbon Nanotubes. *Chemistry of Materials* **2017**, *29* (5), 2239–2245. <https://doi.org/10.1021/acs.chemmater.6b05182>.
- (30) Harris, A. W.; Yehezkeli, O*; Hafenstine, G. R.; Goodwin, A. P.; Cha, J. N. Light-Driven Catalytic Upgrading of Butanol in a Biohybrid Photoelectrochemical System. *ACS Sustainable Chem. Eng.* **2017**, *5* (9), 8199–8204. <https://doi.org/10.1021/acssuschemeng.7b01849>.
- (31) Ma, K.; Yehezkeli, O.; He, L.; Cha, J. DNA for Assembly and Charge Transport Photocatalytic Reduction of CO₂. *Advanced Sustainable Systems* **2018**, *2* (4). <https://doi.org/10.1002/adsu.201700156>.
- (32) Harris, A.; Harguindey, A.; Patalano, R.; Roy, S.; **Yehezkeli, O.**; Goodwin, A.; Cha, J. Investigating Protein-Nanocrystal Interactions for Photodriven Activity. *ACS Applied Bio Materials* **2020**, *3* (2), 1026–1035. <https://doi.org/10.1021/acsabm.9b01025>.
- (33) Mukha, D.; Cohen, Y.; **Yehezkeli, O.** Bismuth Vanadate/Bilirubin Oxidase Photo(Bio)Electrochemical Cells for Unbiased, Light-Triggered Electrical Power Generation. *ChemSusChem* **2020**, *13* (10), 2684–2692. <https://doi.org/10.1002/cssc.202000001>.
- (34) Cohen, Y.; Gluz, N.; Bamany, S.; Maayan, G.; **Yehezkeli, O.** Layer by Layer Assembly of a Bio-Inspired Manganese Cluster for Electrocatalytic Water Oxidation. *Journal of Catalysis* **2020**, *389*, 207–211. <https://doi.org/10.1016/j.jcat.2020.05.030>.

- (35) Herzallh, N. S.; Cohen, Y.; Mukha, D.; Neumann, E.; Michaeli, D.; Nechushtai, R.; Yehezkeli, O. Photosynthesis Z-Scheme Biomimicry: Photosystem I/BiVO₄ Photo-Bioelectrochemical Cell for Donor-Free Bias-Free Electrical Power Generation. *Biosensors and Bioelectronics* **2020**, *168*, 112517. <https://doi.org/10.1016/j.bios.2020.112517>.
- (36) Bachar, O.; Moshe Meirovich, M.; Kurzion, R.; Yehezkeli, O. In Vivo and in Vitro Protein Mediated Synthesis of Palladium Nanoparticles for Hydrogenation Reactions. *Chemical Communications* **2020**, *56* (76), 11211–11214. <https://doi.org/10.1039/D0CC04812G>.
- (37) Meirovich, M.; Bachar, O.; Yehezkeli, O. Artificial, Photoinduced Activation of Nitrogenase Using Directed and Mediated Electron Transfer Processes. *Catalysts* **2020**, *10* (9). <https://doi.org/10.3390/catal10090979>.
- (38) Cohen, R.; Cohen, Y.; Mukha, D.; Yehezkeli, O. Oxygen Insensitive Amperometric Glucose Biosensor Based on FAD Dependent Glucose Dehydrogenase Co-Entrapped with DCPIP or DCNQ in a Polydopamine Layer. *Electrochimica Acta* **2021**, *367*, 137477. <https://doi.org/10.1016/j.electacta.2020.137477>.
- (39) Herzallh, N. S.; Cohen, Y.; Cohen, R.; Chmelnik, O.; Shoham, Y.; Yehezkeli, O. Cellulose to Electricity Conversion by an Enzymatic Biofuel Cell. *Sustainable Energy Fuels* **2021**, *5* (18), 4580–4586. <https://doi.org/10.1039/D1SE00896J>.
- (40) Shlosberg, Y.; Krupnik, N.; Tóth, T. N.; Eichenbaum, B.; Meirovich, M. M.; Meiri, D.; Yehezkeli, O.; Schuster, G.; Israel, Á.; Adir, N. Bioelectricity Generation from Live Marine Photosynthetic Macroalgae. *Biosensors and Bioelectronics* **2022**, *198*, 113824. <https://doi.org/10.1016/j.bios.2021.113824>.
- (41) Meirovich, M. M.; Bachar, O.; Nandi, R.; Amdursky, N.; Yehezkeli, O. Tailoring Quantum Dot Sizes for Optimal Photoinduced Catalytic Activation of Nitrogenase. *ChemSusChem* **2021**, *14* (24), 5410–5416. <https://doi.org/10.1002/cssc.202101676>.
- (42) Cohen, R.; Bitton, R.; Herzallh, N.; Cohen, Y.; Yehezkeli, O. Utilization of FAD-Glucose Dehydrogenase from *T. Emersonii* for Amperometric Biosensing and Biofuel Cell Devices. *Analytical Chemistry* **2021**, *93* (33), 11585–11591. <https://doi.org/10.1021/acs.analchem.1c02157>.
- (43) Gihaz, S[§]; Herzallh, N. S[§]; Cohen, Y.; Bachar, O.; Fishman, A.; Yehezkeli, O. The Structure of Bilirubin Oxidase from *Bacillus Pumilus* Reveals a Unique Disulfide Bond for Site-Specific Direct Electron Transfer. *Biosensors* **2022**, *12* (5), 258. <https://doi.org/10.3390/bios12050258>.
- (44) Khaskia, M.; Shpasser, D.; Cohen, R.; Yehezkeli, O.; Manor, O.; Gazit, O. M. First-Principle Colloidal Gate for Controlling Liquid and Molecule Flow Using 2D Claylike Nanoparticles. *ACS Appl. Mater. Interfaces* **2022**, *14* (28), 32657–32664. <https://doi.org/10.1021/acsami.2c05077>.
- (45) Shlosberg, Y.; Meirovich, M. M.; Yehezkeli, O.; Schuster, G.; Adir, N. Production of Photocurrent and Hydrogen Gas from Intact Plant Leaves. *Biosensors and Bioelectronics* **2022**, *215*, 114558. <https://doi.org/10.1016/j.bios.2022.114558>.
- (46) Bachar, O.; Meirovich, M. M.; Zeibaq, Y.; Yehezkeli, O. Protein-Mediated Biosynthesis of Semiconductor Nanocrystals for Photocatalytic NAD(P)H Regeneration and Chiral Amine Production. *Angewandte Chemie International Edition* **2022**, *61* (23), e202202457. <https://doi.org/10.1002/anie.202202457>.
- (47) Cohen, R.; Herzallh, N. S.; Meirovich, M. M.; Bachar, O.; Frech, L.; Cohen, Y.; Yehezkeli, O. An Oxygen-Insensitive Biosensor and a Biofuel Cell Device Based on FMN 1-Lactate Dehydrogenase. *Bioelectrochemistry* **2023**, *149*, 108316. <https://doi.org/10.1016/j.bioelechem.2022.108316>.

*shared corresponding author

15.2 Review papers

1. **O. Yehezkeli**, R. Tel-Vered, D. Michaeli, I. Willner and R. Nechushtai Photosynthetic Reaction Center – Functionalized Electrodes for Photo- Bioelectrochemical Cells. *Photosynthesis Research*, 120, 71-85 (2014).
2. **O. Bachar**, **M. Meirovich** **R. Cohen**, **Y. Cohen** and **O. Yehezkeli** Biotic-Abiotic hybrids for Bioanalytics *Current Opinion in Biotechnology*, **2022**, *Submitted*(invited).

15.3 Books

Chapters in books

R. Tel-Vered, **O. Yehezkeli** and I. Willner Biomolecule/ Nanomaterial Hybrid Systems for Nanobiotechnology. In: *Nano-Biotechnology for Biomedical and Diagnostic Research*, E. Zahavy, A. Ordentlich, S. Yitzhaki and A. Shaffermann (Eds.), Springer Science + Business Media B.V., Dordrecht, The Netherlands, 2012, Chapter 1, pp. 1-16.

Patents granted

- Willner, Itamar, Tel-Vered, Ran, Yehezkeli, Omer, Baravik, Ilina *Electrode, Method and System for Determining an Analyte in a Liquid Medium*. 2011
- Willner Itamar, Nechushtai Rachel, Tel-Vered Ran, Yehezkeli Omer, Willner Israel Ofer, Roizman-Sade Dan, *Photochemical Electrode, Construction and Uses Thereof.*, 2012

At the Technion

- Omer Yehezkeli, Roy Cohen, Yifat Cohen, Dina Mukha *Oxygen Insensitive Amperometric Biosensors*, 2022 **PCT/IL2021/051078**

16. CONFERENCES

Invited

- **2019** *Nano-Bio Cyborg Organism*, ERC- LS9 panel, Brussels, Belgium
- **2021** *Biotic/Abiotic Interfaced Systems for Biosensing and Enhanced (Bio)Catalysis*, Bio-convergence and Technion Human Health Initiative
- **2021** *Biotic/Abiotic Interfaced Systems for Biosensing and Enhanced (Bio)Catalysis* Israel electrochemical Society, Bar Ilan University.
- **2022** *Coupling Enzymes with Electrodes for Biosensing, Enzymatic Biofuel Cells or Biomass to Electricity Generating Devices*. ISEL, Ariel University
- **2023** (Sep.) ISE 74th Annual Meeting, Lyon, France

Contributed Talks and Posters

- **2013** **Omer Yehezkeli**, Rachel Nechushtai, Ran Tel vered, Itamar Willner “Electrical communication between proteins and electrodes for bio-catalytic, bio-electrocatalytic and bioelectrochemical applications” Minerva meeting, Jerusalem Israel.
- **2015** **Omer Yehezkeli**, Jennifer N. Cha “Nano-hybrids for photo-assisted water oxidation and fuel generation” ACS meeting, Denver Colorado,

- **2018** “From Bioelectronics and Photoelectrochemical Cells to Nano-Biohybrid Systems for Fuel Production” Workshop on “Redox Films for Energy Conversion – bioelectrochemical and molecular systems, Marseille, France,
- **2018** “Nano-Bio interfaces for Energy, Sensing and therapeutic applications”
- BGU, Biotechnology Engineering seminar
- **2018** “Nano-Bio-Hybrid Systems for Photo-biocatalytic activation of enzymes”
- International Conference on Nanomedicine and Nanobiotechnology, Rome, Italy
- **2019-** “Enzyme-Based Photoelectrochemical Systems for Photo-bioelectrocatalytic Processes” 70th Annual Meeting of the International Society of Electrochemistry, Durban, South Africa – Bioelectrochemistry panel
- **2019-** “Enzyme-Based Photoelectrochemical Systems for Photo-bioelectrocatalytic Processes” ACS meeting, San Diego- Photocatalysis for Energy & Environment
- **2020-** “Biotic/Abiotic Photo-Bioelectrochemical Cells for the Generation of Electrical Power”, 71th Annual Meeting of the International Society of Electrochemistry Belgrade (Online), Bioelectrochemistry panel
- **2021-** “Biotic/Abiotic Systems for Biosensing and Enhanced Catalysis” BGU Biomedical Engineering Seminar (Online)
- **2021-** The 3rd Annual Conference on Chemical Sensors for Wearable Devices “Enzyme Based Amperometric Biosensors and Biofuel Cells Applications”, Israel (Online)
- **2021-** University of Erlangen-Nuremberg, Germany Biocatalysis seminar, “Biotic/Abiotic Interfaced Systems for Enhanced (Bio)Catalysis” (online)
- **2022-** Coupling Enzymes with Electrodes or QDS For Biotic/Abiotic Energy Generating Devices University of Erlangen-Nuremberg, Germany, Biocatalysis seminar (Online)
- **2022-** “Coupling Enzymes with Electrodes for Biosensing, Biofuel Cells or Biomass Conversion to Electricity Devices, 15th International Fischer Symposium, Kloster Seon, Germany
- **2022-** Biotic/abiotic interfaced systems for biosensing and enhanced (bio)catalysis Israel chemistry society 86 meeting, Tel-Aviv
- **2022-** Coupling Enzymes with Electrodes for Biosensing, Biofuel Cells, And Biocatalysis Applications ISE 73rd Annual Meeting 202, Xiamen, China (shifted to Online)
- **2022-** “Coupling Enzymes with Electrodes for Biosensing, Biofuel Cells or Biomass Conversion to Electricity Devices” ISE regional meeting, Prague, Czech Republic
- **2022-** Coupling Oxidoreductases with Electrodes for Biosensing, Biofuel Cells, and Biocatalysis Applications, Oxizyme 2022 Siena, Italy

Participation in organizing conferences

Scientific Committees

- **2018** International Conference on Nanomedicine and Nanobiotechnology
- **2019** International Conference on Nanomedicine and Nanobiotechnology
- **2022** ISE, International Society of Electrochemistry, Organizing committee, division 4, Xiamen, China 2022 (online).
- **2022** ISEL, Israel Electrochemistry Society, Scientific Committee Board,
- **2022** ISBE, Israel Society for Biotechnology Engineering, Scientific Committee

Served as a chair/moderator

- **2019** Israel Electrochemistry Meeting, ISEL2019 served as chair of bioelectrochemistry session

- **2019** Israel Society for Biotechnology Engineering, bi-annual conference, co-chair, nanobiotechnology
- **2021** ISE, International Society of Electrochemistry, 2021 Chair at division 2
- **2022** ISE regional, International Society of Electrochemistry Chair at division 2, 73rd Annual ISE Meeting (Online)
- **2022** ISE regional, International Society of Electrochemistry, 2022 Chair at division 2
- **2022** ISBE, Israel Society for Biotechnology Engineering, Academia/ Industry panel moderator.

Students Achievements, Talks and Posters

Talks

Bioelectrochemical society meeting, Antwerp, Belgium

- **Roy Cohen-** *Construction of an enzymatic, oxygen-insensitive L-lactate sensor using soluble or grafted redox mediators.*
- **Matan Mairovich-** *Nitrogenase Based Nano-Bio-Hybrid Systems for Photobiocatalytic Processes.*
- **Oren bachar-** *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles.*

Israel electrochemical society

Roy Cohen- ISEL 2021 - Utilization Of FAD-GDH From *Aspergillus Sp.* and *T. emersonii* For Glucose Amperometric Biosensing And Biofuel Cell Devices

Israel Society of biotechnology Engineering (ISBE)

Roy Cohen- ISBE 2022 - Amperometric Dual Sensing of Glucose and L-Lactate Based On O₂-Insensitive Flavoenzymes

Oren Bachar- ISBE 2022 - Living Cells with Biosynthesized Nanomaterials – Can We Generate a Cyborg Organism?

Bioenergy Systems to Address Global Energy Challenges, an online seminar

(Online) **Oren Bachar-** Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles

Poster presentation

Mor Shemesh

- *Conversion of Cellulose Biomass into Electrical Power Using Cellulase Enzymes in a Photo-Bio-electrochemical Cell*, The 6th Conference of the Israel Society for Biotechnology Engineering (ISBE), December 2022, Tel-Aviv, Israel.
- *Conversion of Cellulose Biomass into Electrical Power Using Cellulase Enzymes in a Photo-Bio-electrochemical Cell*, Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.

Matan Meirovich

- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. The 6th Conference of the Israel Society for Biotechnology Engineering (ISBE), December 2022, Tel-Aviv, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. The 86th Annual Meeting of the Israel Chemical Society, September 2022, Tel Aviv, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. Israel Electrochemistry Meeting, May 2022, Ariel University, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. Grand Technion Energy Program (GTEP) annual research day, 2021, Technion, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. Israel Electrochemistry Meeting, June 2021, Bar-Ilan University, Israel.
- *Nitrogenase Based Nano-Bio-Hybrid Systems for Photo-biocatalytic Processes*. The 5th Conference of the Israel Society for Biotechnology Engineering (ISBE), December 2019, Tel-Aviv, Israel.

Roy Cohen

- *Amperometric sensing of multiple biomarkers using oxygen-independent flavoenzymes*, Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.
- *Amperometric sensing of multiple biomarkers using oxygen-independent flavoenzymes*, The 86th Annual Meeting of the Israel Chemical Society, September 2022, Tel Aviv, Israel.
- *Amperometric sensing of multiple biomarkers using oxygen-independent flavoenzymes*, The Israel Electrochemistry Society (ISEL), May 2022, Ariel University.

Nidaa Herzallh

- *Cellulose to electricity conversion by Bias-Free Biofuel Cell*, Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.
- *Cellulose to electricity conversion by Bias-Free Biofuel Cell*, Israel Electrochemical Society Conference 2021, Bar-Ilan University.
- *Cellulose to electricity conversion by Bias-Free Biofuel Cell*, The Israel Electrochemistry Society (ISEL), May 2022, Ariel University.
- *Cellulose to electricity conversion by Bias-Free Biofuel Cell*, The 86th Annual Meeting of the Israel Chemical Society, September 2022, Tel Aviv, Israel.

Yara Zeibaq

- *Stable protein 1 hemin complex as peroxidase mimicking artificial enzyme*, The 6th Conference of the Israel Society for Biotechnology Engineering (ISBE), December 2022, Tel-Aviv, Israel
- *Stable protein 1 hemin complex as peroxidase mimicking artificial enzyme* Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.
- *Stable protein 1 hemin complex as peroxidase mimicking artificial enzyme*, The 86th Annual Meeting of the Israel Chemical Society, September 2022, Tel Aviv, Israel.

Dr. Yifat Cohen

- *Unbiased Photoelectrochemical Cell Based On $\text{BiVO}_4/\text{Mn}_2\text{O}_3/\text{O}_2\text{cr}$ 16(H_2O)4 Photoanode And Bilirubin Oxidase Biocathode* Israel Electrochemistry Meeting in Ben-Gurion University of the Negev, 2019, Beer-Sheva Israel.

Oren Bachar

- *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles*, Grand Technion Energy Program (GTEP) annual research day, October 2022, Technion, Israel.
- *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles*, The 86th Annual Meeting of the Israel Chemical Society, September 2022, Tel Aviv, Israel.
- *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles*, Chemical Science Symposium: Biohybrid Approaches to Sustainable Energy Conversion, 2021, virtual event.
- *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles*, Israel Electrochemical Society Conference 2021, Bar-Ilan University.
- *Instilling New Characteristics in Whole-cell Biohybrids Using Novel Inorganic Nano-Organelles*, The 5th Conference of the Israel Society for Biotechnology Engineering, December 2019, Tel Aviv.

17. Notes

2018- present Biotechnology Olympics for high school students.

2018 Technion 2018 5K race, second place (age 31-40)

2022 Advisory for Ilan Ramon space lab high school students.

2022- present Technion basketball team