KEREN R. SHEMTOV-YONA

CURRICULUM VITAE
(updated April 2024)

PERSONAL

Name:	Keren (Rima) Shemtov-Yona
Address:	Department of Oral Biology School of Dental Medicine Sackler Faculty of Medicine Tel-Aviv University
e-mail:	kerenshemtov@tauex.tau.ac.il
Phone:	(972) 54 7548997

ACADEMIC DEGREES

2018	**Ph.D.**, Faculty of Mechanical Engineering, Technion.
2013	**M.Sc.**, Medical Sciences (cum laude). Faculty of Medicine, Technion.
2007	**DMD**, School of Dental Medicine, Tel Aviv University
2000	**B.Sc.**, Biology and Life Sciences, Faculty of Life Sciences, Tel Aviv University

Academic appointments

2022-present	Senior Lecturer, School of Dental Medicine, Oral Biology Dept., Tel Aviv University.
2022-present	Associate Research Scientist (part-time), Technion Research and Development Foundation.
2020-2022	Lecturer, School of Dental Medicine, Oral Biology Dept., Tel Aviv University.
2015-2019	Internship in Periodontology, School of Dental Medicine, Tel Aviv University.
2014-2021	Research Scientist "A" (part-time), Technion Research and Development Foundation.
2007-present	General clinical dentistry practice in private clinics.

TEACHING ACTIVITY

2020-present	Lecturer in Oral Biology, Tel Aviv University
2015-present	Instructor for undergraduate students
2018-present	Perio Instructor for the undergraduate students

RESEARCH INTERESTS

Biomechanics and failure of dental implants. Mechanics of dental implants. Durability and failure of the implants and novel manufacturing techniques. Dental materials. Implant surfacing.

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL SOCIETIES

Israel Expert Delegate to ISO Committee on Dental Implants ISO/TC 106/SC 8/WG 4 (since 2017)
Internation Association of Dental Research (IADR)
Israeli Society of Periodontology and Osseointegration
Israeli Dental Association (IDA)

AWARDS & DISTINCTIONS

2019 Certified periodontologist
2019 HP-Indigo Award for "Excellent and Innovative Research", Faculty of Mechanical Engineering, Technion
2012 Dean Excellence Award, Faculty of Mechanical Engineering, Technion
2013 Best Poster Award- Research Day, Faculty of Mechanical Engineering, Technion

GRADUATE STUDENTS AND INTERNS

M.Sc.

2023 **Phillip Amal,** in progress " Implantoplasty: can we control and prevent long-term mechanical complications due to treatment? -An in-vitro study. Tel-Aviv University. (With Dr. Ilan beiteltum).
2023 **Yehonatan Miara**, in progress "The effect of loading on the integrity of titanium oxide layer". Technion. (With Prof. D. Rittel)
2021 **Sagi Aharoni**, in progress, "The biomechanical relation between bone parameters and its mechanical properties". Technion. (With Prof. D. Rittel).
2021 **Dr. Hana Mois**, "Identifying implant-related causes for early dental implant failure Tel-Aviv University. (With Dr. Perry Raz).
2021 **Amit E. Shavit**, graduated 2023 "Environmental failure of biomedical metallic implants: from bioinert to bio reject" Technion. (With Prof. D. Rittel).
2015 **Raoof Korabi**, graduated 2018, "Modeling the dental implant-bone interaction". Technion. Informal advisor. (With Prof. D. Rittel and Dr. A. Dorogoy).

Interns and Undergraduates

2021 **Dr. Mohana Barhum** (Intern) "The effect of fluid contamination on reverse torque values of implant's abutment screws after cyclic loading: in vitro study". Tel-Aviv University. (with Dr. A. Arieli and Dr. S.Levartovski).
2021 **Dr. Ibrahim Adawi** (Intern) "The effect of different T-Base height on the survival of screw-retained monolithic zirconia crown - In Vitro Study" Tel-Aviv University. (With Dr. Jaron Blasbalg, Prof. R. Pilo and Dr. S. Levartovski).
2021 **Nicole Linzider** (Undergraduate DMD student) "The biomechanical relation between bone parameters and its mechanical properties" Tel-Aviv University.

PUBLICATIONS

Theses

Ph.D. thesis	Mechanical durability of dental implants. Advisor: Prof. D.Rittel
M.Sc. thesis	Effect of dental implants' diameter on their fatigue performance Advisors: D. Rittel, and E. Machtei,
DMD project	Changes in proliferative index of the epithelium and the density of myofibroblasts in the connective tissue of the tongue of irradiated rats treated with pilocarpine – An immunohistochemical study with PCNA and α-SMA. Advisors: Profs. M. Littner and Dr. M. Vered.

Published papers

1. K. Shemtov-Yona, D. Rittel, L. Levin and E. Machtei, (2012), "*The Effect of Oral-Like Environment on Dental Implants' Fatigue Performance*", Clinical Oral Implants Research 25, 2,e166-e170.
2. K. Shemtov-Yona, D. Rittel, L. Levin and E. Machtei, (2014),"*Effect of Dental Implant Diameter Fatigue Performance. Part I: Fatigue performance*", Clinical Implant Dentistry and Related Research, 16(2),172-177.

3. K. Shemtov-Yona, D. Rittel E. Machtei and L. Levin, (2014), "*Effect of Dental Implant Diameter on Fatigue Performance. Part II: Failure Analysis*", Clinical Implant Dentistry and Related Research, 16(2),178-184.
4. Shemtov-Yona, K. & Rittel, D. (2014), "*Identification of Failure Mechanisms in Retrieved Fractured Dental Implants*", Engineering Failure Analysis. 38: 58-65.
5. K. Shemtov-Yona, D. Rittel and A. Dorogoy, (2014), "*Mechanical Assessment of Grit Blasting Surface Treatments of Dental Implants*", J. Mech. Behavior of Biomedical Biomaterials, 39, 375-390.
6. K. Shemtov-Yona and D. Rittel, (2015), "*On the Mechanical Integrity of Retrieved Dental Implants*", J. Mech. Behavior of Biomedical Biomaterials, 49, 290-299.
7. K. Shemtov-Yona and D. Rittel, (2015), "*An Overview of the Mechanical Integrity of Dental Implants*", **invited paper***,* Biomedical Research International, 2015, article ID 547384.
8. K. Shemtov-Yona and D. Rittel, (2016), "*Random Spectrum Loading of Dental Implants: An Alternative Approach to Functional Performance Assessment*", J. Mech. Behavior of Biomedical Biomaterials, 62, 1-9.
9. K. Shemtov-Yona and D. Rittel, (2016), "*Fatigue Failure of Dental Implants in Simulated intraoral media*", J. Mech. Behavior of Biomedical Biomaterials, 62, 636-644.
10. K. Shemtov-Yona and D. Rittel, (2016), "*Fatigue of dental implants: facts and fallacies*", **invited paper***,* Dentistry Journal, 4(2), 16.
11. K. Shemtov-Yona, H. Stolero, L. Chaushu and C. Nemcovsky (2016) Root coverage: why, when and how? **invited paper** Shinanut 55: 14-20
12. A. Dorogoy, D. Rittel, K. Shemtov-Yona and R. Korabi, (2017), "*Modeling dental implant insertion*", J. Mech. Behavior of Biomedical Biomaterials, 68, 42-50.
13. D. Rittel, A. Dorogoy and K. Shemtov-Yona, (2017), "*Modelling dental implant extraction by pullout and torque and procedures*", J. Mech. Behavior of Biomedical Biomaterials, 71, 416-427.
14. R. Korabi, K. Shemtov-Yona, A. Dorogoy and D. Rittel, (2017), "*The failure envelope concept applied to the bone-dental implant system*", Scientific Reports, 7, 2051.
15. R. Korabi, K. Shemtov-Yona and D. Rittel, (2017), "*On stress/strain shielding and the material stiffness paradigm for dental implants*", Clin. Implant Dentistry and Related Research, DOI: 10.1111/cid.12509
16. D. Rittel, K. Shemtov-Yona and R. Korabi, (2017), "*Engineering dental implants*", **invited paper**, Current Oral Health Reports, 4(3), 239-247.
17. D. Rittel, K. Shemtov-Yona and R. Lapovok, (2018), "*Random spectrum fatigue performance of severely plastically deformed titanium for implant dentistry applications*", J. Mech. Behavior of Biomedical Biomaterials, 83, 94-101.
18. D. Rittel, A. Dorogoy and K. Shemtov-Yona, (2018), "*Modelling the effect of osseointegration on dental implant pullout and torque removal tests*", Clin. Implant Dentistry and Related Research, 20, 683-691.
19. K. Shemtov-Yona, M. Ozcan and D. Rittel, (2018), "*Fractographic characterization of fatigued zirconia dental implants tested in room air and saline solution*", Eng. Failure Analysis, 96, 298-310.
20. D. Rittel, A. Dorogoy, G. Haïat and K. Shemtov-Yona, (2019), "*Resonant frequency analysis of dental implants*", Medical Eng. & Physics*,* 66, 65-74*.*
21. K. Shemtov-Yona, M. Özcan, A. Godinger, N. de Basso and D. Rittel, (2019), "*Random spectrum fatigue of zirconia dental implants in air and saline solution*", Engng. Failure Analysis*,*106, 104160.
22. A. Dorogoy, G. Haïat, K. Shemtov-Yona and D. Rittel, (2020), "*Modelling ultrasonic wave propagation in a dental implant-bone system*", J. Mech. Behavior of Biomedical Matls*,* 103, 103547.
23. S. Chen, D. Rittel and K. Shemtov-Yona, (2021), "*The normal stiffness of the edentulous alveolar process*", Bone Reports, 14, 101066.

24. K. Shemtov-Yona, (2021), "*Quantitative assessment of the jawbone quality classification: A meta-analysis study*", PLoS ONE, 16(6), e0253283.

25. J. Xie, D. Rittel, K. Shemtov-Yona, F.A. Shah and A. Palmquist, (2021), "*A stochastic micro to macro mechanical model for the evolution of bone-implant interface stiffness*", Acta Biomaterialia, 131, 415-423.
26. S. Levartovsky, H. Bohbot, K. Shemtov-Yona, T. Brosh, and R. Pilo (2021), "*Effect of different surface treatments of lithium disilicate on the adhesive properties of resin cements*". Materials 14(12), 3302.
27. S. Chen, D. Rittel and K. Shemtov-Yona, (2022), "*Probing the sensitivity of the resonant frequency analysis to the dental implant-bone condition: A numerical study*", J. Mech. Behavior of Biomedical Biomaterials, 128, 105128.
28. S. Gershov, J. Xie, F.A. Shah, K. Shemtov-Yona and D. Rittel (2022), "*Modelling the resonant frequency associated with the Spatio-temporal evolution of the bone-dental implant interface*", Acta Biomaterialia, 154:302-311.
29. S. Aharoni, D. Rittel and K. Shemtov-Yona, (2023), "Compressive mechanical behavior and failure of the pig bone rib and correlation to its morphological characteristics", *Mechanics of Materials*, 185, 104767.
30. K. Shemtov-Yona, A. Arieli, M. Barhum, R. Pilo and S. Levartovsky, (2023), "The effect of contaminating media on the static and dynamic mechanical resilience of dental implant abutments' screws", *Clin Implant Dent. Relat. Res.* 2023,1–10.
31. J. Xie, Y. Qiao, Z. Wang, Y. Qi, Q. Xu, K. Shemtov-Yona, P. Chen and Daniel Rittel, (2024), "Application of the Taguchi method to areal roughness-based surface topography control by waterjet treatments", *Applied Surface Science-Advances*, 19, 100548.
32. A. Shavit, D. Rittel and K. Shemtov-Yona, (2024), "The chemical and microstructural signature of peri-implantitis on titanium dental implants' surface", *Applied Surface Science-Advances*, 19, 100553.
33. K. Shemtov-Yona, A. Arieli, M. Barhum, R. Pilo & S. Levartovsky, (2023). The effect of contaminating media on the static and dynamic mechanical resilience of dental implant abutments' screws: In vitro study. *Clinical Implant Dentistry and Related Research.* https://doi.org/10.1111/cid.13271
34. J. Xie, Y. Qiao, Y. Qi, Q. Xu, K. Shemtov-Yona, P. Chen, & D. Rittel (2024). *Application of the Taguchi method to areal roughness-based surface topography control by waterjet treatments*. Applied Surface Science Advances, 19, 100548.

RESEARCH GRANTS

2020 **Swedish Research Authority**, **STINT**, exploratory grant with Prof. A. Palmquist, Dr. F. Ali-Shah (U. Goteborg), Dr. Jing Xie (Beijing IT) and Prof. D. Rittel (Technion), Modelling of the bone-implant interface (15k$)

2023 **Sackler Faculty of Medicine Tel-Aviv University** Research grant. Immunomodulation of monocyte/macrophage cells by piezoelectric materials (40kS)

2024 **The Maurice and Gabriela Goldschleger School of Dental Medicine Fishel Foundation** Research grant. Paving the way to understand peri-implant disease effect on titanium passivation layer - from the perspective of biomaterial (19.4kS)

2024 **The Maurice and Gabriela Goldschleger School of Dental Medicine Fishel Foundation** Research grant With Dr. Ilan beiteltum Implantoplasty: can we control and prevent long-term mechanical complications due to treatment? -An in-vitro study. Tel-Aviv University. (14kS)

SPECIAL PRESENTATIONS

ISO Technical Meeting, Tromso (Norway), September 2016. Presentation and discussion of new concepts regarding the mechanical reliability of dental implants.

PARTICIPATION TO ORGANIZATION OF CONFERENCES

Co-organizer of the "Dental Biomechanics" session at the BSSM Conference, Southampton, August 2018.

CONFERENCES

Keynote Lectures

1. Shemtov-Yona, K. "Evaluating the fatigue performance of zirconia dental implants". The 3rd International Workshop on Advanced Ceramics and Technologies for Dentistry (ACT4D), Stochholm. March 17-19, 2019

Invited talks

2. Shemtov-Yona, K. "The mechanical reliability of ceramic dental implants". British Society of Strain Measurement Conference, Southampton. Aug-29-31, 2018.
3. Shemtov-Yona, K., "Mechanical reliability and failure of dental implants: Metallic or ceramic?", IAOC World Scientific meeting, San Diego. Feb. 14-18, 2018.
4. Shemtov-Yona, K. and Rittel, "Can dental implants fracture?". The 14th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Tel Aviv. Sept. 22-24, 2016.
5. Shemtov-Yona, K. "How and why do dental implants fracture". Computer Methods in Biomechanics and Biomedical Engineering, Tel Aviv, Israel, September 20-22, 2016.
6. Shemtov-Yona, K. "The mechanical reliability of dental implants". Advanced Technologies and Techniques in oral Implantology ATTOI 2017, Tel Aviv. May 22-24, 2017.
7. Shemtov-Yona, K., "Modelling the dental implant-bone interaction". University of Melbourne-Technion joint workshop on biomedical engineering, Tel Aviv. December 2017.
8. Shemtov-Yona, K., "Mechanical Reliability and Failure of Dental Implants: Metal or Ceramic?", IAOCI 2018, San Diego, USA, Feb. 16-17, 2018.
9. Shemtov-Yona, K. "Peri-implantitis Effect on Dental Implants' Passivation Layer: From Biocompatible to Bio-reject" IADR 2022, Marseille, France, Sep. 15-17, 2022.

Contributed talks

1. Shemtov-Yona, K., Rittel, D., Levin, L. & Machtei, E. "Effect of dental implant diameter on fatigue performance" The International Association of Dental Research (IADR) Israeli Division Meeting. Tel Aviv, Israel. June 30, 2011.
2. Shemtov-Yona, K., "Effect of dental implant diameter on fatigue performance". Research Day Faculty of Mechanical Engineering. Haifa, Israel. November 11, 2013.
3. Shemtov-Yona, K., Rittel, D., "Failure analysis of dental implants", The International Association of Dental Research (IADR) Israeli Division Meeting. Tel Aviv, Israel. June 27, 2013.
4. Shemtov-Yona, K. Rittel, D. and Dorogoy, A. "Grit blasting surface treatment of dental implants : beneficial or detrimental?", the 16th International Conference on Experimental Mechanics. Cambridge, England. July 7-11, 2014.
5. Shemtov-Yona, K. Rittel, D. and Shavit A. " Peri-implantitis: Biomaterial involvement in disease pathogenesis" Tel Aviv, Israel. February 2023.

SEMINARS

- Shemtov-Yona, K., Rittel, D., Levin, L. & Machtei, E. "Effect of dental implant diameter on fatigue performance" The Ruth and Bruce Rappaport Faculty of Medicine, Research Day Technion Israel, 2012.
- Shemtov-Yona, K. Rittel, D. "An overview of the mechanical integrity of dental implants" IBV Biomechanics Institute Universidad Politecnica de Valencia. Valencia, Spain. January 19, 2016.
- Shemtov-Yona, K. Rittel, D. "An overview of the mechanical integrity of dental implants" Centro Nacional de Investigaciones Metalurgicas. Madrid, Spain January 18, 2016.
- Shemtov-Yona, K. "Evaluating the mechanical performance of dental implants", University of Gothenburg, Biotech Center, March 20, 2019.