Hyun (Michel) Koo, D.D.S., M.S., Ph.D.
Co-Founder and Co-Director, Center for Innovation & Precision Dentistry
Program Director, NIDCR T90/R90 Postdoctoral Training in Engineering and Oral-Craniofacial Sciences
School of Dental Medicine | School of Engineering & Applied Sciences

Professor, Department of Orthodontics
Divisions of Pediatric Dentistry & Community of Oral Health
School of Dental Medicine

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Education and Training

1989-1993 **D.D.S.,** São Paulo State University (UNESP), Brazil

1993-1996 **M.S.** in Food Engineering
Mentor: *Yong K Park, MD, PhD*
The University of Campinas (UNICAMP), Brazil

1996-1999 **Ph.D.** in Oral Biology and Pathology
Mentor: *Jaime A. Cury, DDS, PhD*; Co-mentor: *William H. Bowen, BDS, PhD*
The University of Campinas (UNICAMP), Brazil
University of Rochester Medical Center, Rochester, NY

1999-2001 **Post-doctoral fellow** in Oral Biology and Microbiology
Mentor: *William H. Bowen, BDS, PhD*
University of Rochester Medical Center, Rochester, NY

2011-2012 **NIH Adjunct Researcher** (Visiting Scientist)
Mentor: *Kenneth M. Yamada, MD, PhD*
National Institute of Dental and Craniofacial Research (NIDCR)
National Institutes of Health (NIH), Bethesda, MD

Professional Experience

1993-1994 **Dentist**, São Paulo State Military Hospital, Dental Unit Araraquara, Brazil

1997-1999 **Instructor in Dentistry**, Piracicaba School of Dentistry
The University of Campinas (UNICAMP), Brazil

2001-2002 **Instructor in Dentistry**, Eastman Department of Dentistry
University of Rochester Medical Center

2002-2008 **Assistant Professor of Dentistry**, Eastman Department of Dentistry
University of Rochester Medical Center

2006-2008 **Assistant Professor of Microbiology & Immunology**, Department of Microbiology & Immunology, University of Rochester Medical Center

2008-2013 **Associate Professor (tenured) of Dentistry, Microbiology & Immunology**, Center for Oral Biology, University of Rochester Medical Center

2013- **Professor (tenured) and Director of Biofilm Research**, Levy Center for Oral Health, Department of Orthodontics, Divisions of Pediatric Dentistry and Community Oral Health, School of Dental Medicine, University of Pennsylvania

2019- **Co-Founder and Co-Director, Center for Innovation & Precision Dentistry (CiPD),** a multidisciplinary Center bridging the *Schools of Dental Medicine, Engineering and Applied Sciences* at the University of Pennsylvania.

* CiPD is an inter-School center with faculty members (tenured and tenure-track) from the schools of dental medicine, medicine, engineering, and applied/computational sciences. It bridges basic & translational researchers (in biofilm microbiome, host-microbe interactions, genetic diseases, and tissue biology/regeneration), clinicians (in dental caries, periodontal diseases, and oral cancer) with scientists working in diverse fields (from robotics, AI, bio/nanotechnology to organ-on-a-chip, biosensors, mRNA and single cell-genomics) to study disease mechanisms and to accelerate affordable diagnostic/therapeutic solutions targeted to susceptible populations. The Center's resources and organization are supported by the Schools' Deans and the Provost Office.

CiPD Portfolio:

Research grants funded (NIH/NIDCR, DoD, NSF, Industry): **$15.7M**
Training grant funded (NIDCR T90R90): **$2.5M**
Fellowships awarded: **$300K**
Faculty members: **30**
Trainees: **11**

Honors and Awards

Individual

1998 IADR/Colgate-Palmolive Research in Prevention Award
2001 IADR/Colgate-Palmolive Research in Prevention Award
2001 The Basil G. Bibby Fellowship Award for Excellence in Oral Health Research
2006 Excellence in Research Incentives Program – University of Rochester
2006 IADR/GlaxoSmithKline Innovation in Oral Care Award
2006 IADR Distinguished Scientist Award - Young Investigator Award
2007 IADR Basil G. Bibby Young Investigator in Cariology Award
2009 Best of USDA National Research Initiative Grants
2011 Honorary Professor, West China College of Stomatology, Sichuan University
2013 IADR/GlaxoSmithKline Innovation in Oral Care Award
2016 Selected as Penn Fellow, University of Pennsylvania
2018 IADR Distinguished Scientist Award - William H. Bowen Caries Research Award
2019 Penn Health-Tech Award for Small Scale Robotics, University of Pennsylvania
2019 Elected Fellow, American Association for the Advancement of Science (AAAS)
2020 Emerging Inventor of the Year, Penn Center for Innovation, University of Pennsylvania
2022 Honorary Skou Professor of Microbiology and Immunology, Arhus University, Denmark
2021-23 Clarivate Highly Cited Research

By students/fellows (as mentor/supervisor)

2004 IADR/Unilever Hatton Award, Brazilian Division 1st place (Simone Duarte)
2004 The Basil G. Bibby Fellowship Award (Patricia Nino de Guzman)
2007 AADR/Unilever Hatton Award - Senior category 2nd place (Simone Duarte)

2008 AADR/Unilever Hatton Award - Senior category 2nd place (Marlise Klein)
2011 AADR/Unilever Hatton Award - Senior category 1st place (Jin Xiao)
2012 AADR/Unilever Hatton Award - Senior category 2nd place (Megan Falsetta)
2014 Penn Dental Medicine Research Retreat AADR Travel Award (Geelsu Hwang)
2015 Summer Research Program Scholarship – Penn Dental Medicine (Victor Sun)
2015 Penn Dental Medicine Research Retreat AADR Travel Award (Lizeng Gao)
2015 IADR/GlaxoSmithKline Innovation in Oral Care Award (Lizeng Gao)
2016 Penn Dental Medicine Research Day AADR Travel Award (Geelsu Hwang)
2016 Penn Dental Medicine Research Day AADR Travel Award (Victor Sun)
2017 IADR Lion Dental Research Award (Kassapa Ellepola)
2017 AADR/Unilever Hatton Award - Senior category finalist (Dongyeop Kim)
2017 Colgate-Palmolive Pediatric Dentistry DScD Fellowship (Yuan Liu)
2018 IADR Colgate Research in Prevention Travel Award (Kassapa Ellepola)
2018 AADR/Unilever Hatton Award - Senior category 2nd place (Yuan Liu)
2018 AADR Joseph Lister Award for New Investigators (Dongyeop Kim)
2019 Colgate-Palmolive Award for Excellence in Oral Health Research (Yuan Liu)
2019 IADR Colgate Research in Prevention Travel Award (Kenneth Sims)
2019 AADR Bloc Travel Grant (Kenneth Sims)
2019 IADR Women in Science Award for Distinguished Research (Aurea Simon Soro)
2020 IADR Women in Science Award for Promising Talent (Yuan Liu)
2021 AADOCR Hatton Award – Senior category 2nd place (Zhi Ren)
2021 IADR Hatton Award – Senior category 2nd place (Zhi Ren)
2021 AADOCR Joseph Lister Award for New Investigators (Yuan Liu)
2022 American Society for Microbiology - Early Career Best Presentation Award (Zhi Ren)

Scholarship

Research Funding

Research and Training Grants

Active

- NIH/NIDCR R01DE025848 “Biofilm elimination and caries prevention using multifunctional nanocatalysts”. Role: Principal Investigator, 9/1/16-8/31/26
- NIH/NIDCR R01DE031491 “Small scale robotics for automated dental biofilm treatment”. Role: Principal Investigator (MPI), 09/30/23 – 08/31/27
- Colgate Palmolive “L-arginine impact on interkingdom biofilm development and tissue infection using mouth-on-a-chip (MoC) technology”. Role: Principal Investigator (MPI), 03/01/23 – 02/28/25
- NIH/NIDCR R01DE026782 “High performance antibacterial fluoride-releasing dental materials”. Role: Principal investigator, subcontract with Louisiana State University, 4/1/18-3/31/24
- NIH/NIDCR T90DE030854 “Advanced Training at the Interface of Engineering and Oral-Craniofacial Sciences”. Role: Program Director (Kate Stebe, co-director), 07/01/21-06/30/26

- NIH/NIDCR R90DE031532 "Advanced Training at the Interface of Engineering and Oral-Craniofacial Sciences". Role: Program Director (Kate Stebe, co-director), 07/01/21-06/30/26

Completed

- NIH/NIDCR, R03DE15441 "Effects of natural agents with fluoride on caries". Role: Principal Investigator, 08/01/2003 - 05/31/2005
- NIH/NIDCR, P01DE11549, Environmental influences and dental caries (Bowen WH, Principal Investigator). Role: Investigator of Subproject 3: Salivary Arginine/Lysine/Peptides and Caries Experience, 09/01/1995 - 12/31/2005
- NIH/NIDCR, R01DE016139, "Influence of cranberry on plaque-related diseases". Role: Principal Investigator, 01/01/2004 - 12/01/2008
- USDA, NRI2006-35200-16589 "Influence of Grape (*Vitis vinifera*) polyphenols on dental biofilm related oral diseases". Role: Principal Investigator, 12/01/2005 - 11/30/2008
- NIH/NIDCR, R21DE016280 "Improving clinical outcomes for early childhood caries" (Berkowitz R, Principal Investigator). Role: Investigator, 05/01/2005 - 08/31/2008
- IADR/GlaxoSmithKline Award "A novel therapeutic approach to prevent formation of cariogenic biofilm". Role: Principal Investigator, 07/01/2006 - 07/31/2008
- NIH/NIDCR, 5T32 DE07202-20 "Training Program in Oral Science" (Quivey R, Program Director). Role: Associate Director, 08/01/2010 - 07/31/2012
- NIH/NIDCR R90DE022529 "Training Program in Oral Science" (Quivey R, Program Director). Role: Associate Director, 8/1/11-7/31/13
- NIH/NIDCR T90DE021985 "Training Program in Oral Science" (Quivey R, Program Director). Role: Associate Director, 8/1/11-7/31/13
- NIH/NIDCR, R01DE018023 "Evaluation of a novel anti-caries approach to modulate virulence of *S. mutans*". Role: Principal Investigator, 04/01/2008 - 06/30/2014
- NIH/NIDCR R01DE016139 "Molecular basis for caries-inhibiting effects of cranberry flavonoids". Role: Principal investigator, 7/1/10-6/30/16
- NIH/NIDCR, R01DE017157 "Low pH-mediated membrane biosynthesis in *S. mutans*" (Quivey R, Principal Investigator). Role: Investigator, 07/01/2007 - 05/31/2012
- NIH/NIDCR, R34 DE016280, "Improving clinical outcomes for severe early childhood caries" (Berkowitz R, Principal Investigator), Role: Investigator, 05/01/12 - 04/30/13
- NIH/NIDCR, R01 DE019783, "Role of the Spx regulator in *S. mutans*" (Lemos J, Principal Investigator). Role: Investigator, 02/05/2010 - 07/31/2013
- NSF EFRI-MIKS1137186 "Deciphering and Controlling the Signaling Processes in Bacterial Multicellular Systems and Bacteria-Host Interactions", Principal investigator of subcontract with Syracuse University, 10/01/11-9/30/15
- IADR/GlaxoSmithKline Award "Controlled-release in situ of antibiofilm agents via pH-activated nanoparticle-carriers". Role: Principal Investigators (Klein and Koo), 04/01/13-03/03/16

- DENTSPLY "Influence of composite material on the 3D architecture and mechanical stability of oral biofilms", Principal investigator, 07/01/15-06/30/16
- University Research Foundation (URF) "New anti-biofilm approach using nanotechnology", Co-principal investigator, 3/1/16-2/28/17
- Johnson & Johnson "Control of pathogenic microbes through disruption of oral biofilms using therapeutic proteins produced in edible plant chloroplasts", Co-principal investigator with Henry Daniell, 7/18/16-1/18/18
- University Research Foundation (URF), Phase 1 Research Development Grant "Precision dental medicine for oral health", Co-principal investigator with Kate Stebe, 7/1/17-12/31/18
- Penn Global – China Research and Engagement Fund (CREF) "Role of Penn Dental Medicine in dental research and clinical practice in China, Co-principal investigator with Syngcuk Kim, Dana Graves and Songtao Shi, 10/1/2015-9/30/2018
- Johnson & Johnson "A novel anti-plaque and anti-caries approach using catalytic nanoparticles: In situ clinical study", Principal Investigator, 12/1/17-03/01/19
- Procter & Gamble "Glucosyltransferases inhibitors and anti-biofilm activity", Principal Investigator, 03/1/18-12/31/19
- NIH R01DE18023 "Evaluation of a novel anti-caries approach to modulate virulence". Role: Principal Investigator, 9/1/16-8/31/21
- NIH R01DE025220 "*S. mutans*-*C. albicans* interactions synergize the virulence of cariogenic biofilms". Role: Principal Investigator, 7/1/15-6/30/22
- Procter & Gamble "Development of automated dental plaque removal". Role: Principal Investigator (MPI), 10/01/22 – 09/30/23
- NIH/NIDCR R56DE029985 "Small scale robotics for automated dental biofilm treatment". Role: Principal Investigator (MPI), 10/01/21 – 09/30/23

<u>Career and Fellowship Grants (as mentor/co-mentor)</u>

Active

- NIH K23DE032419-01A1 (Liu, Y) "Association between early Candida infection (oral thrush) and severe early childhood caries" Role: Co-primary mentor with Patricia Corby, 09/01/2023-08/31/2028
- NIH K99DE033428-01 (Ren, Z) "Probing the role of *Selenomonas sputigena* in supragingival biofilm spatial structuring and virulence". Role: Co-primary mentor with Kathleen Stebe, 02/01/2024 - 01/31/2026
- NIH K23DE027412-01 (Xiao, J) "Association between oral candida and the onset of severe early childhood caries". Role: Co-primary mentor with Dorota Kopycka-Kedzierawski, 8/1/18-7/31/2023

Completed

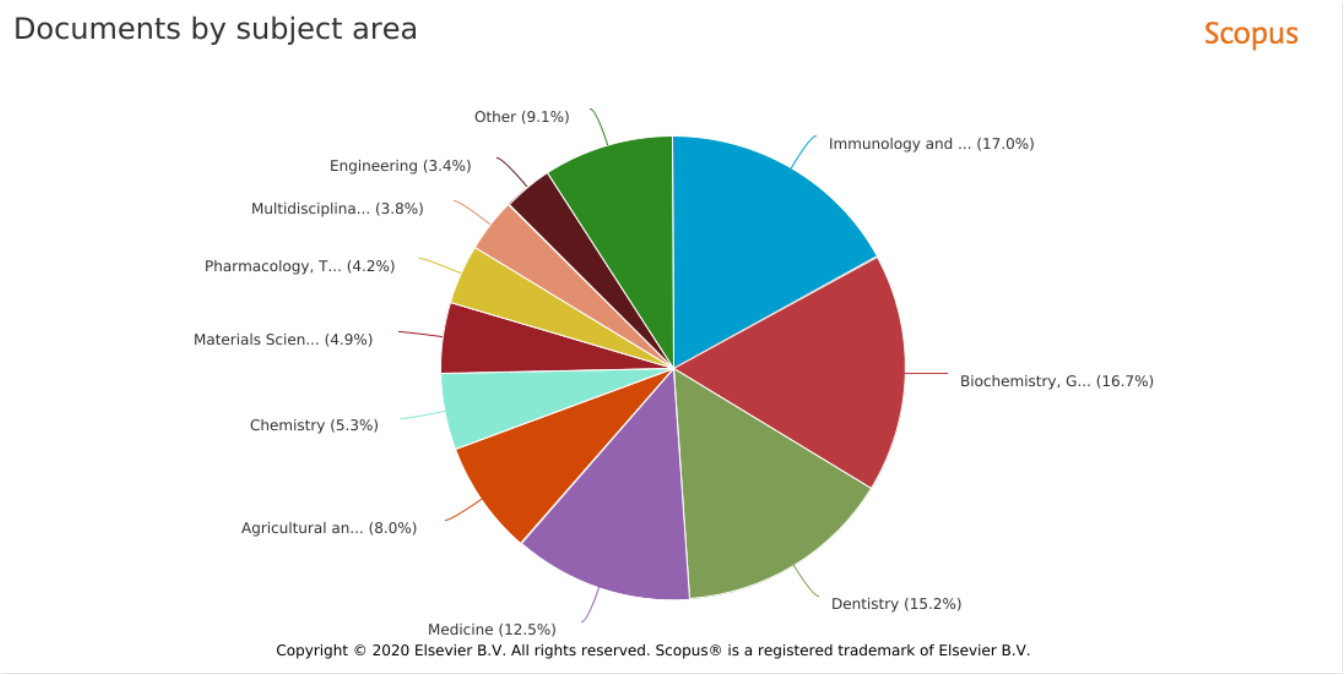
- NIH KL2TR001999 (Xiao, J) "*C. albicans* and *S. mutans* oral colonization in infants with early childhood caries", Co-primary mentor with Dorota Kopycka-Kedzierawski, 8/1/17-7/31/19
- NIH F31DE026944-01 (Sims, Kenneth) "Engineered pH-responsive nanoparticle drug delivery to inhibit oral biofilm formation". Role: Co-primary mentor with Danielle Benoit, 4/1/17-3/31/20
- NIH K99EB028838-01 (Hajfathalian, Maryam) "Anti-biofilm laser mediated photothermal ablation via complex noble metal nanostructures". Role: Co-primary mentor with David Cormode, 08/01/20-07/31/22

Patents

- Oral compositions containing terpenoid and flavonoid, and use thereof. United States Serial No.10/450,231 (12/13/2004)
- Compounds from *Rheedia brasiliensis* for prevention and/or treatment of diseases. Brazil I.N.P.I. BRPI 0603419-5A (08/02/2006)
- Compositions containing vestitol and neovestitol, and use thereof. Brazil I.N.P.I./S.P. Serial No.BR 10 2012 032648 (12/18/2012)
- Nanoparticles for controlled release of anti-biofilm agents and methods of use. United States Patent US 9,566,247 (02/14/2017)
- Iron oxide nanoparticles and methods of use thereof. United States Patent US 10,369,089 (08/06/2019)
- Small-scale robots for biofilm eradication. United States Serial No. 62/77230 (11/26/2019)
- Automated device for dental plaque monitoring and removal. U.S. Provisional Application No.: 62/927,414 (10/2019)
- Iron Oxide Nanoparticles and Methods of Use Thereof. Japanese Patent, Patent No. 6785234 (10/2020)
- Iron Oxide Nanoparticles and Methods of Use Thereof. Australian Patent, Patent No. 2016219074 (03/2021)
- Iron oxide nanoparticles and methods of use thereof. Chinese Patent, Patent No. CN107708709B (07/2021)
- Compositions and methods for inhibiting biofilm deposition and production. United States Patent US 11,246,819 (02/15/2022)

Publications

Peer-reviewed articles (>29,000 citations, h-index 89, i10-index 181)



Highlighted Articles

Understanding oral biofilm microbiomes

- Kim D, Barraza JP, Arthur RA, Hara A, Lewis K, Liu Y, Scisci EL, Hajishengallis E, Whiteley M, Koo H. Spatial mapping of polymicrobial communities reveals a precise biogeography associated with human dental caries. **Proc Natl Acad Sci U S A**, 117(22):12375-12386, 2020. Faculty Opinions Recommended Article.
- Cho H, Ren Z, Divaris K, Roach J, Lin BM, Liu C, Azcarate-Peril MA, Simancas-Pallares MA, Shrestha P, Orlenko A, Ginnis J, North KE, Zandona AGF, Ribeiro AA, Wu D, Koo H. *Selenomonas sputigena* acts as a pathobiont mediating spatial structure and biofilm virulence in early childhood caries. **Nature Communications**, 14(1):2919, 2023.
- Simon-Soro A, Ren Z, Krom BP, Hoogenkamp MA, Cabello-Yeves PJ, Daniel SG, Bittinger K, Tomas I, Koo H, Mira A. Polymicrobial aggregates in human saliva build the oral biofilm. **mBio** 13(1):e0013122, 2022. Editor's Selected Article.
- Simon-Soro A, Kim D, Li Y, Liu Y, Ito T, Sims KR Jr, Benoit DSW, Bittinger K, Koo H. Impact of the repurposed drug thonzonium bromide on host oral-gut microbiomes. **NPJ Biofilms Microbiomes**, 7(1):7, 2021
- Kim D, Liu Y, Benhamou RI, Sanchez H, Simon-Soro A, Li Y, Hwang G, Fridman M, Andes DR, Koo H. Bacterial-derived exopolysaccharides enhance antifungal drug tolerance in a cross-kingdom oral biofilm. **The ISME J**, 12(6):1427-1442, 2018.

- Hwang G, Liu Y, Kim D, Li Y, Krysan DJ, Koo H. *Candida albicans* mannans mediate *Streptococcus mutans* exoenzyme GtfB binding to modulate cross-kingdom biofilm development *in vivo*. **PLoS Pathogens**, 13:e1006407, 2017. Selected by Faculty of 1000.

Nanotechnology and microrobotics-based therapeutic approaches

- Hwang G, Paula AJ, Hunter EE, Liu Y, Babeer A, Karabucak B, Stebe K, Kumar V, Steager E, Koo H. Catalytic antimicrobial robots for biofilm eradication. **Science Robotics**, 4 (29), eaaw2388, 2019. Highlighted by NIH Research Matters, NIDCR Highlights & News
- Oh MJ, Yoon S, Babeer A, Liu Y, Ren Z, Xiang Z, Miao Y, Cormode DP, Chen C, Steager E, Koo H. Nanozyme-based robotics approach for targeting fungal infection. **Advanced Materials**, e2300320, 2023 doi: 10.1002/adma.202300320
- Huang Y, Liu Y, Pandey NK, Shah S, Simon-Soro A, Hsu JC, Ren Z, Xiang Z, Kim D, Ito T, Oh MJ, Buckley C, Alawi F, Li Y, Smeets PJM, Boyer S, Zhao X, Joester D, Zero DT, Cormode DP, Koo H. Iron oxide nanozymes stabilize stannous fluoride for targeted biofilm killing and synergistic oral disease prevention. **Nature Communications**, 14(1):6087, 2023
- Oh MJ, Babeer A, Liu Y, Ren Z, Wu J, Issadore DA, Stebe KJ, Lee D, Steager E, Koo H. Surface Topography-adaptive robotic superstructures for biofilm removal and pathogen detection on human teeth. **ACS Nano**. 16(8):11998-2012, 2022. Highlighted by NIH Research Matters, NIDCR Highlights & News, ACS Nano Most Read Article, Editor's Selected for Cover page
- Liu Y, Huang Y, Kim D, Ren Z, Oh MJ, Cormode DP, Hara AT, Zero DT, Koo H. Ferumoxytol nanoparticles target biofilms causing tooth decay in the human mouth. **Nano Letters** 21(22):9442-9449, 2021. Editor's Selected for Cover page.
- Liu Y, Naha, PC, Hwang G, Kim D, Huang Y, Simon-Soro A, Jung HI, Ren Z, Li Y, Gubara S, Alawi F, Zero D, Hara AT, Cormode DP, Koo H. Topical ferumoxytol nanoparticles disrupt biofilms and prevent severe tooth decay in vivo via intrinsic catalytic activity. **Nature Communications**, 9(1):2920, 2018. Selected for *Nature Communications* Editors' Highlights.

Bio/nanomaterials for infection control

- Hajfathalian M, de Vries CR, Hsu JC, Amirshaghaghi A, Dong YC, Ren Z, Liu Y, Huang Y, Li Y, Knight SA, Jonnalagadda P, Zlitni A, Grice EA, Bollyky PL, Koo H, Cormode DP. Theranostic gold-in-gold cage nanoparticles enable photothermal ablation and photoacoustic imaging in biofilm-associated infection models. **The Journal of Clinical Investigation**, 133(21):e168485, 2023
- Huang Y, Liu Y, Shah S, Kim D, Simon-Soro A, Ito T, Hajfathalian M, Li Y, Hsu JC, Nieves LM, Alawi F, Naha PC, Cormode DP, Koo H. Precision targeting of bacterial pathogen via bi-functional nanozyme activated by biofilm microenvironment. **Biomaterials**, 268:120581, 2021
- Xu Z, Qiu Z, Liu Q, Li D, Shen X, Fan K, Xi J, Gu Y, Tang Y, Jiang J, Huang Y, Xu J, He J, Gao X, Liu Y, Koo H, Yan X, Gao L. Converting organosulfur compounds to inorganic polysulfides against resistant bacterial infections. **Nature Communications**, 9(1):3713, 2018. Highlighted by Chemistry Community
- Naha PC, Liu Y, Hwang G, Huang Y, Gubara S, Jonnakuti V, Simon-Soro A, Kim D, Gao L, Koo H, Cormode DP. Dextran-coated iron oxide nanoparticles as biomimetic catalysts for

localized and pH-activated biofilm disruption. **ACS Nano** 13(5):4960-4971, 2019. Editor's Selected for Perspective and Cover page.

- Hwang G, Koltisko B, Jin X, Koo H. Nonleachable imidazolium-incorporated composite for disruption of bacterial clustering, exopolysaccharide-matrix assembly, and enhanced biofilm removal. **ACS Appl Mater Interfaces**, 9(44):38270-38280, 2017
- Liu Y, Kamesh AC, Xiao Y, Sun V, Hayes M, Daniell H, Koo H. Topical delivery of low-cost protein drug candidates made in chloroplasts for biofilm disruption and uptake by oral epithelial cells. **Biomaterials**, 105:156-166, 2016. Top-rated article in *Biomaterials*, and finalist of STAT contest for Best Innovations in Science and Medicine (2017)

Developing new concepts and methodologies

- Petrie RJ, Koo H, Yamada KM. Generation of compartmentalized pressure by a nuclear piston governs cell motility in a 3D matrix. **Science**, 345(6200):1062-5, 2014. Selected for perspective/commentary articles in *Nature Reviews Molecular Cell Biolology* and *Science*.
- Ren Z, Jeckel H, Simon-Soro A, Xiang Z, Liu Y, Cavalcanti IM, Xiao J, Tin NN, Hara A, Drescher K, Koo H. Interkingdom assemblages in human saliva display group-level surface mobility and disease-promoting emergent functions. **Proc Natl Acad Sci U S A**, 119(41): e2209699119, 2022. Highlighted in *Scientific American*, NIH Matters and NIDCR News.
- Paula AJ, Hwang G, Koo H. Dynamics of bacterial population growth in biofilms resemble spatial and structural aspects of urbanization. **Nature Communications** 11(1):1354, 2020. PMID: 32170131 PMCID: PMC7070081.
- Rodrigues NS, Fran√ßa CM, Tahayeri A, Ren Z, Saboia VPA, Smith AJ, Ferracane JL, Koo H, Bertassoni LE. Biomaterial and biofilm interactions with the pulp-dentin complex-on-a-chip. **Journal of Dental Research**, 100(10):1136-1143, 2021
- Glazier VE, Murante T, Murante D, Koselny K, Liu Y, Kim D, Koo H, Krysan DJ. Genetic analysis of the *Candida albicans* biofilm transcription factor network using simple and complex haploinsufficiency. **PLoS Genetics**, 13(8):e1006948, 2017. Selected by Faculty of 1000.
- Horev B, Klein MI, Hwang G, Koo H, Benoit DSW. pH-activated nanoparticles for targeted delivery and controlled drug release to disrupt oral biofilms. **ACS Nano**, 9(3):2390-404, 2015. Highlighted in Science and selected by Faculty of 1000.

Review/perspective articles. Our research interests and future directions, from interchangeable concepts between cell & developmental biology and biofilms to host-microbiome interactions, prospective biofilm targeting therapeutics, and new nanotechnologies for biomedical applications, can be found in the articles below.

- Koo H, Allan RN, Howlin RP, Stoodley P, Hall-Stoodley L. Targeting biofilms: current and prospective therapeutics. **Nature Reviews Microbiology**, 15: 740–755, 2017.
- Cormode DP, Gao L, Koo H. Emerging biomedical applications of enzyme-like catalytic nanomaterials. **Trends in Biotechnology**, 36(1):15-29, 2018.
- Bowen WH, Burne RA, Wu H, Koo H. Oral Biofilms: Pathogens, matrix, and polymicrobial interactions in microenvironments. **Trends in Microbiology**, 26(3):229-242, 2018.
- Lamont RJ, Koo H, Hajishengallis G. The oral microbiota: dynamic communities and host interactions. **Nature Reviews Microbiology**, 16(12):745-759, 2018

- Karygianni L, Ren Z, Koo H, Thurnheer T. Biofilm Matrixome: Extracellular Components in Structured Microbial Communities. **Trends in Microbiology**, 28(8):668-681, 2020.
- Tran HH, Watkins A, Oh MJ, Babeer A, Schaer TP, Steager E, Koo H. Targeting biofilm infections in humans using small scale robotics. **Trends in Biotechnology**, S0167-7799(23)00295-0, 2023. doi: 10.1016/j.tibtech.2023.10.004
- Hajishengallis G, Lamont RJ, Koo H. Oral polymicrobial communities: Assembly, function, and impact on diseases. **Cell Host Microbe**, 31(4):528-538, 2023

Complete List of Published Work in MyBibliography (link below):

https://www.ncbi.nlm.nih.gov/myncbi/hyun.koo.1/bibliography/public/

Editorials and Chapters

1. Klein MI, Falsetta ML, Xiao J, Bowen WH, Koo H: The role of extracellular polysaccharides matrix in virulent oral biofilms (Chapter 5) in Jakubovics NS, Palmer Jr RJ (Eds.) *Oral Microbial Ecology: Current Research and New Perspectives*, Caister Academic Press, UK, 2013
2. Quivey RQ, Koo H, Lemos J, Kopycka-Kedzierawski DT: Dental caries (Chapter 11) in Lamont RJ (Ed.) *Oral Microbiology and Immunology*, ASM Press, Washington DC, 2013.
3. Quivey RQ, Koo H, Lemos J, Kopycka-Kedzierawski DT: Dental caries (Chapter 12) in Lamont RJ (Ed.) *Oral Microbiology and Immunology*, ASM Press, Washington DC, 2013.
4. Bowen WH, Tenuta L, Koo H, Cury JA: Dental caries: Etiology and Pathogenesis (Chapter 11) in Lamont RJ, Jenkinson H, Hajishengallis G, Koo H (Eds). *Oral Microbiology and Immunology*, 3rd edition, ASM Press, Washington DC, 2019.
5. Lemos J, Wu H, Quivey RQ, Koo H: Pathogenic mechanisms in dental caries (Chapter 12) in Lamont RJ, Jenkinson H, Hajishengallis G, Koo H (Eds). *Oral Microbiology and Immunology*, 3rd edition, ASM Press, Washington DC, 2019.
6. Ren Y, Van der Mei HC, Hajishengallis G, Koo H, Busscher HJ: Therapeutic approaches for biofilm control and host modulation in oral diseases (Chapter 21) in Lamont RJ, Jenkinson H, Hajishengallis G, Koo H (Eds). *Oral Microbiology and Immunology*, 3rd edition, ASM Press, Washington DC, 2019.
7. Krom B, Jakubovics N, Koo H (Eds). *Oral Biofilms in Health and Disease*, Nature Springer, UK, 2022 (in press).

Abstracts

- More than 150 abstracts at Scientific Meetings, including American Association for Dental Research (AADR), International Association for Dental Research (IADR), ASM, European Organization for Caries Research (ORCA) and Institute of Food Technology (IFT) among others

Teaching and Training

Lecturer:

1997-1999 Biochemistry, Piracicaba Dental School, The State University of Campinas, Brazil

2002-2013 Oral Biology, Graduate Program (Ph.D. students and dental residents), University of Rochester Medical Center, Rochester, NY
ORB 580: Cariology (2002-2013)
ORB 493: Oral Microbiology (2004-2013)
ORB 579: Saliva and Salivary Glands (2004-2013)

2013-2018 Dental Caries lecture in Biochemistry and Microbiology of Dental Caries (dental students), School of Dental Medicine, University of Pennsylvania

2013- Dental Caries lecture in Pediatric Dentistry (dental residents), School of Dental Medicine, University of Pennsylvania.

2013- Research Seminar in Orthodontics, School of Dental Medicine, University of Pennsylvania

2013- Ortho Research thesis defense, School of Dental Medicine, University of Pennsylvania

2014- Orientation in Research in Pediatric Dentistry, School of Dental Medicine, University of Pennsylvania

2015- Pediatric Dentistry (dental students, Pedo 704), School of Dental Medicine, University of Pennsylvania

Training Activities

Post-Doctoral Trainees and Fellows

2005-2007 Simone Duarte, D.D.S., Ph.D. Post-Doctoral Fellow. *Current Position: Associate Professor (tenure-track) of Pharmacology, New York University – College of Dentistry*. **2007 Recipient of AADR Hatton Award (Post-doctoral category)**

2006-2009 Marlise Klein, D.D.S., Ph.D. Post-Doctoral Fellow. *Current Position: Assistant Professor (tenure-track) of Biomaterials, State University of Sao Paulo (UNESP), Brazil*. **2008 Recipient of AADR Hatton Award (Post-doctoral category) and 2013 Winner of IADR/GSK Innovation in Oral Care Award.**

2010-2013 Jin Xiao, D.D.S., Ph.D. Post-Doctoral Fellow. *Current Position: Associate Professor (tenure-track) of Dentistry, University of Rochester Medical Center.* **2011 Recipient of AADR Hatton Award (Post-doctoral category).**

2010-2011 Guoping Feng, Ph.D. Post-Doctoral Fellow. *Current Position: Research Associate, Cornell University and Food Safety Scientist, Olam International.*

2010-2013 Megan Falsetta, Ph.D. Post-Doctoral Fellow. *Current Position: Research Associate, University of Rochester Medical Center.* **2012 Recipient of AADR Hatton Award (Post-doctoral category)**

2013-2015 Lizeng Gao, Ph.D. Post-Doctoral Fellow. *Current Position: Principal Investigator, Chinese Academy of Sciences (CAS), Beijing, China.* **2015 Winner of IADR/GSK Innovation in Oral Care Award**

2012-2019 Geelsu Hwang, Ph.D. Research Associate. **NIH R03 Grant awarded (2016); NIH R01 Grant Awarded (2018).** *Current Position: Associate Professor (tenured), Restorative Dentistry, University of Pennsylvania School of Dental Medicine.*

2014-2019 Dongyeop Kim, Ph.D. Research Fellow (Post-Doc) **2018 Finalist of AADR Lister Award Competition.** *Current Position: Assistant Professor (tenure-track), School of Dentistry, Chonbuk National University, Korea.*

2014-2019 Yuan Yu, D.D.S., Ph.D. Research Fellow (Post-Doc) **2018 Recipient of AADR Hatton Award (Post-doctoral category); 2019 Recipient of IADR Women in Science Award for Promising Talent**. *Current Position: Research Associate, Department of Preventive and Restorative Sciences, University of Pennsylvania School of Dental Medicine.*

2016-2017 Indira Cavalcanti, D.D.S., Ph.D. Research Fellow (Post-Doc).

2017-2021 Aurea Simon Soro, D.D.S., Ph.D. Post-Doctoral Research Fellow **2019 Recipient of IADR Women in Science Award for Distinguished Research.** *Current Position: Assistant Professor, Department of Stomatology, University of Seville*

2017-2021 Yue Huang, Ph.D. Post-Doctoral Research Fellow. *Current Position: Senior researcher, National Institutes of Health, Bethesda, MD*

2019-2023 Ren Zhi, D.D.S., Ph.D., Post-Doctoral Research Fellow. **2022 Double-winner AADOCR and IADR Hatton Awards.** *Current Position: NIDCR K99 Fellow, University of Pennsylvania, Philadelphia, PA*

2021-2023 Min Jun Oh, Ph.D., Post-Doctoral Research Fellow. *Current Position: Staff Engineer, Material Development Team, Device Solutions (Semiconductor), Samsung Electronics*

2022-2024 Seokyoung Yoon, Ph.D., Post-Doctoral Research Fellow

2021- Nil Pandey, Ph.D., Post-Doctoral Research Fellow

2021- Huy Trang Hong, Ph.D., Post-Doctoral Research Fellow

2021- Zhenting Xiang, D.D.S., Ph.D., Post-Doctoral Research Fellow

2022- Sunghee Lee, Ph.D., Post-Doctoral Research Fellow

2024- Xiaolei Li, D.M.D., Ph.D., Post-Doctoral Research Fellow

Graduate Students

2002-2006 Joanne Thimothe, Ph.D. in Food Science, Cornell University (Co-mentored with Dr. Olga Padilla-Zakour). *Current Position: Food Industry (Bimbo USA)*

2002-2005 Simone Duarte (D.D.S.), Ph.D. in Pharmacology, Piracicaba School of Dentistry, State University of Campinas (UNICAMP), Brazil (Co-mentored with Dr. Pedro L. Rosalen). **2004 Recipient of IADR/Unilever Hatton Divisional Award, Brazilian Division (Junior category).**

2003-2006 Regiane Yatsuda (D.D.S.), Ph.D. in Pharmacology, Piracicaba School of Dentistry, State University of Campinas (UNICAMP), Brazil (Co-mentored with Dr. Pedro L. Rosalen). *Current Position: Associate Professor (tenure-track), State University of Bahia, Brazil.*

2004-2007 Ramiro Murata (D.D.S.), Ph.D. in Pharmacology, Piracicaba School of Dentistry, State University of Campinas (UNICAMP), Brazil (Co-mentored with Dr. Pedro L. Rosalen). *Current Position: Assistant Professor (tenure-track), Ostrow School of Dentistry, University of Southern California (USC).*

2005-2008 Jin Xiao (D.D.S.), Ph.D. in Dentistry, West China College of Stomatology, Sichuan University, China (Co-mentored with Dr. Xue Dong Zhou).

2009-2012 Bruno B. Silva (D.D.S.), Ph.D. in Pharmacology, Piracicaba School of Dentistry, State University of Campinas (UNICAMP), Brazil (Co-mentored with Dr. Pedro L. Rosalen). *Current Position: Research Fellow, University of São Paulo, Brazil*

2008-2012 Punsiri M. Colonne, Ph.D. in Pathology, University of Rochester Medical Center. *Current Position: Microbiologist, Plum Island Animal Disease Ctr, NY*

2012-2014 Benyamin Horev, M.S. in Biomedical Engineering, University of Rochester (Co-mentored with Dr. Danielle Benoit at Rochester)

2013-2015 Jinzhi He, D.D.S., Ph.D. in Oral Biology, West China College of Stomatology, Sichuan University. *Current Position: Clinical Faculty, Department of Endodontics, West China School of Stomatology, Sichuan University, China*

2014-2015 Jiayi Zhou, M.S. candidate in Biomedical Engineering, University of Rochester (Co-mentored with Dr. Danielle Benoit at Rochester)

2014-2017 Sara Bukhari (D.D.S.), M.S. (Endodontics) candidate, Penn Dental Medicine. *Current Position: Clinical Faculty, Department of Dental Services, King Khaled National Guard Hospital, Saudi Arabia*

2014-2018 Jia Tian, dual-degree D.M.D./M.S. candidate in Bioengineering, Penn Dental Medicine and Penn Engineering

2016-2018 Ren Zhi, D.D.S., Ph.D. candidate in Oral Biology, West China College of Stomatology, Sichuan University, China. *Current Position: Post-Doctoral Research Fellow, University of Pennsylvania – School of Dental Medicine*

2017-2018 Alexandra Cocco, D.D.S., Ph.D. candidate in Dentistry, School of Dentistry, Federal University of Pelotas, Brazil. *Current Position: Assistant Professor (tenure-track), CNEC – School of Dentistry, Brazil.*

2017-2021 Sherry Wang, dual-degree D.M.D./M.S. candidate in Bioengineering, Penn Dental Medicine and Penn Engineering

2017-2022 Alaa Babeer, D.D.S., D.Sc.D. candidate, Penn Dental Medicine

2019-2022 Zhenting Xiang, D.D.S., Ph.D. candidate in Oral Biology, West China College of Stomatology, Sichuan University, China

2023- Amanda Watkins, D.V.M., Ph.D. candidate in Cell Biology, Physiology, and Metabolism, Penn Medicine

Pre-Doctoral Students

2003 Kevin Bolden (Meharry Medical College), Dental Student Summer Research, Students in Health Professional Schools Grant

2009 Isadora Gonzalez-Rosario (University of Puerto Rico), Dental Student Summer Research Training Program in Oral Sciences (Summer)

2010 Lena DeBaz (University of Rochester), Independent Research Course in Oral Biology (Spring/Fall). *Accepted into Case Western Reserve University School of Dental Medicine*

2011 Jorge L. Pantoja (University of Puerto Rico), Dental Student Summer Research Training Program in Oral Sciences (Summer)

2011 Mirela Kuralic (University of Rochester), Independent Research Course in Oral Biology (Spring). *Accepted into Tufts University of Dental Medicine*

2011 Chia-Hua Pai (University of Rochester), Independent Research Course in Oral Biology (Fall)

2015 Victor Sun, Dental Student Summer Research, Penn Dental Medicine

2015 Yassmin Parsaei, Dental Student Research Volunteer, Penn Dental Medicine

2019 Yilan Mao, Dental Student Summer Research, Penn Dental Medicine

Others (Visiting Scientists)

2005-2006 Jaime A. Cury, D.D.S., Ph.D. Visiting Scholar. *Current Position: Professor of Cariology, Piracicaba School of Dentistry, The University of Campinas (UNICAMP), Brazil*

2005-2006 Altair A. Del Bel Cury, D.D.S., Ph.D. Visiting Scholar. *Current Position: Professor of Prosthodontics, Piracicaba School of Dentistry, The University of Campinas (UNICAMP), Brazil*

2008-2010 Jae-Gyu Jeon D.D.S., Ph.D. Visiting Scholar. *Current Position: Vice-Dean, School of Dentistry, Chonbuk National University, Korea*

2017-2018 Amauri Jardim de Paula, Ph.D. Visiting Scholar. *Current Position: Assistant Professor (tenure-track) of Physics, Federal University of Ceara (UFC), Brazil*

2017-2019 Hoi-In Jung, D.D.S., Ph.D. Visiting Scholar. *Current Position: Assistant Professor (tenure-track), School of Dentistry, Yonsei University, Korea*

2018-2019 Rodrigo Arthur, D.D.S., Ph.D. Visiting Scholar. *Current Position: Assistant Professor (tenure-track), Department of Preventive and Community Dentistry Dental School Federal University of Rio Grande do Sul, Brazil*

2018-2019 Thais de Cássia Negrini, D.D.S., M.S., Ph.D. Visiting Scholar. *Current Position: Postdoctoral Fellow, Faculty of Pharmaceutical Sciences, São Paulo State University (UNESP), Brazil*

2018-2020 Tatsuro Ito, D.D.S., Ph.D. Visiting Scholar. *Current Position: Assistant Professor (tenure-track), School of Dentistry, Nihon University, Japan*

Lectures by Invitation (selected from >80)

Invited and Keynote lectures at major universities and scientific associations in dental, microbiology and multidisciplinary fields (e.g. *International Association for Dental Research, American Society for Microbiology, American Chemical Society, American Institute of Chemical Engineers*) as well as industry. Some examples (last 5 years) include:

2023 Keynote speaker, 37th Annual Meeting of the Japanese Biofilm Society, Tokyo, Japan

2023 Keynote speaker, ConsAsia and National Taiwan University, Taipei, Taiwan

2023 Invited speaker, Jeonbuk National University - School of Dentistry, Jeonbuk, South Korea

2023 Invited speaker, ACS Fall 2023 meeting, ACS Division of Analytical Chemistry, San Francisco, CA

2023 Invited speaker, 2023 Gordon Research Conference, Microbial Population Biology, Proctor Academy, NH

2022 Keynote speaker, 8th Thesinge Biofilm Conference, *Targeting Biofilms on Surfaces: From Nanoparticles to Microrobots*, Groningen, The Netherlands

2022 Keynote speaker, 2nd Global Summit, International Association of Paediatric Dentistry (IAPD), *Global Pathway to Evidence-Based Dental Caries Management,* Rome, Italy

2022 Keynote speaker, Biofilm Symposium at 3M Tech Forum and University of Minnesota, *New technologies and Approaches against Biofilm-related Oral Diseases*, St. Paul, MN

2022 Keynote speaker, Donald E. Knapp Memorial Lecture, *Dentists, scientists, and engineers advancing oral health care,* University of Kentucky, Lexington, AL.

2022 Invited speaker, 6th International Conference on Model Hosts, *Spatial structure of polymicrobial biofilms causing human tooth-decay,* Rhodes, Greece

2022 Invited speaker, 9th American Society of Microbiology (ASM) Conference on Biofilms, *Catalytic Nanomaterials for Targeted Antibiofilm Therapy*, Charlotte, NC.

2021 Keynote speaker, 20th Annual Mark Wilson Conference, Virtually Hosted on the Remo Platform

2021 Invited speaker, 2nd International Conference on Oral Mucosal Immunity and Microbiome, *Spatial structure of oral biofilm in its native state* Kos, Greece

2021 Invited speaker, US Food & Drug Administration (FDA), The Dental and ENT Educational Seminar Series, *Bridging Dentistry and Engineering to Advance Oral Health Care,* Virtual Zoom

2021 Invited speaker, Forsyth Institute Symposium: *Oral Microbiome – Beyond Bacteria,* Boston, MA

2020 Keynote speaker, 17th Annual Research and Clinical Excellence Day, University of California San Francisco (UCSF), San Francisco, CA

2020 Invited speaker, American Chemical Society (ACS) National Meeting, *Spatial organization and 3D architecture of oral biofilms*, Philadelphia, PA, Virtual Zoom

2019 Invited speaker, 97th General Session of IADR, symposium on *Oral Candida: A Hidden Culprit for Dental Caries?*, Vancouver, BC, Canada

2019 Invited speaker, Research Seminar Series at Procter and Gamble, *New Nanotechnology Approaches Targeting Biofilms*, Mason, OH

2019 Invited speaker, International Seminar at Yonsei School of Dentistry, *Targeting Biofilms using Nanotechnology*, Seoul, Korea

2019 Invited speaker, Research Seminar at the São Paulo State University (UNESP), *Advances in Biofilm Research*, São Paulo, Brazil

2018 Invited speaker, American Institute of Chemical Engineers (AIChE) Annual Meeting, *Targeting biofilm and its microenvironment*, Pittsburgh, PA

2018 Invited speaker, 96th General Session of IADR, *Symposium on Cariology for the Future: Inspiration from William H Bowen*, London, UK

2018 Invited speaker, 1st International Conference on Oral Mucosal Immunity and Microbiome, *Bacterial-Fungal Interactions in Early Childhood Caries*, Crete, Greece

Professional Service

Scientific Committees

2001-2013 External Advisory Committee for the Ph.D. and M.S. program in Pharmacology, Piracicaba School of Dentistry, State University of Campinas (UNICAMP), Brazil

2008- *Ad hoc* reviewer for NIH Study section, RCMI and COBRE review panels, NIDCR Dental Materials RFA Review, Challenge Grants in Health and Science Research review panel, RUMP Special Emphasis review panel, Dental-related SBIR/STTR review panel, and Drug Discovery and Mechanisms of Antimicrobial Resistance Study Section.

2010-2014 Standing member, Special Grants Review, DSR Study section, NIH/NIDCR

2012-2015 Member, Hatton Awards Committee of the AADR

2015 NIDCR/NIH Consultant Panel, Workshop on Remineralization: Current State of Science and Future Directions

2017-2021 Standing member, ODCS Study section, NIH/NIDCR

2017-2021 Member, Hatton Awards Committee of the AADR

2018-2019 Acting Chair, ODCS Study section, NIH/NIDCR

2019-2023 Member, IADR Distinguished Scientist Awards Committee, International Association for Dental Research

2022 NIDCR Think Tank on Strategies to Advance Novel Therapies and Treatments for Dental Structures, National Institutes of Health (NIH)

2024 Member, National Advisory Dental and Craniofacial Research Council (NADCR)

Academic Committees (University of Rochester Medical Center)

2004-2005 Chair, Basil G. Bibby Fellowship Award Review Committee

2005-2006 President, Rochester Section of the AADR

2004-2008 Member, Eastman Dental Center Safety Committee

2010-2012 Associate Director, NIH/NIDCR T32 Training Program in Oral Science

2006-2013 Member, University Committee on Animal Resources (UCAR)

2007-2013 Member, Oversight Committee for the Pathology & Morphology Imaging Core

2008-2013 Member, M.S. and Ph.D. thesis Committee, Department of Microbiology & Immunology

2011-2013 Member, Ph.D. thesis Committee, Department of Pathology

2012-2013 Associate Director, NIH/NIDCR T90R90 Training Program in Oral Science

Academic Committees (University of Pennsylvania)

2013-2018	Chair, Penn Dental Medicine Research Day
2013-2018	Chair, AADR Student Travel Award Committee
2013-2016	Member, Committee on Faculty Appointments and Promotions
2013-2016	Member, Committee of Professors
2014-2018	Member, D.Sc.D. Program Admissions Committee
2014-2017	Member, Faculty Mentoring and Development Committee
2014-2017	Member, Curriculum Revision Committee
2014-2018	Chair, Levy Research Seminar Series Committee
2014	Member, M.S. in Oral Biology Thesis Committee (Mahsa Abdolhosseini)
2015	Member, Josephine and Joseph Rabinowitz Award Committee
2015	Member, Biochemistry Chair Search Committee
2015	Member, Research Assist. Prof. of Periodontics Search Committee
2015-	Chair, Anatomy and Cell Biology Faculty Position Search Committee
2015-2018	Chair, Committee on Faculty Appointments and Promotions
2016	Member, Academic Freedom and Responsibility Committee
2016	Member, PDM Research Committee
2016	Member, M.S. in Oral Biology Thesis Committee (Cherissa Chong)
2016	Member, Research Investment Fund Committee
2016	Chair, Nominating Committee
2017	Chair, Biofilm and Microbiome Symposium, Penn Wharton Global Initiatives
2017	Member, Tenure-track search in Microbiology
2018	Member, M.S. in Oral Biology Thesis Committee (Samaneh Mojarrad)
2018	Member, Faculty Mentoring Committee for Dr. Panagiota Stathopoulou in the Department of Periodontics
2018	Chair, Academic Clinician (AC) Track-Assistant Professor and Director of Postdoctoral Orthodontics/Periodontics Program
2018	Secretary, Faculty Senate, School of Dental Medicine, University of Pennsylvania
2019	Member, M.S. in Oral Biology Thesis Committee (Fany Briseyda Ocampo)
2019	Member, Tenure-track position search in Preventive and Restorative Sciences
2019	Member, Faculty Mentoring Committee for Dr. Chider Chen in the Department of Oral and Maxillofacial Surgery and Pharmacology
2019	Member, Faculty Mentoring Committee for Dr. Temitope Omolehinwa in the Department of Oral Medicine
2019	Member, Vision and Strategic Planning Committee, School of Dental Medicine, University of Pennsylvania
2019	Member, Research Committee of the Faculty Senate, School of Dental Medicine, University of Pennsylvania
2019	Member, Microbiology, Virology, and Parasitology Exam Committee, Biomedical Graduate Studies, Perelman School of Medicine
2019	Chair, Nominating Committee of the Faculty Senate, School of Dental Medicine, University of Pennsylvania
2019	Chair, Tenure or Clinician-Educator track position search in Orthodontics
2019	Chair, D.Sc.D. thesis committee for Hellen Teixeira, School of Dental Medicine, University of Pennsylvania

2019-2022 Chair, Faculty Senate, School of Dental Medicine, University of Pennsylvania

Editorial Positions

2002- *Ad hoc* reviewer for several journals including ASM, FEMS and PLoS journals (e.g. *Applied Environmental Microbiology, Antimicrobial Agents and Chemotherapy, Journal of Bacteriology, Infection & Immunity, FEMS Microbiology Letters/Reviews), Caries Research, Archives of Oral Biology, Molecular Oral Microbiology, Journal for Dental Research*, *ACS Nano*, *Biomaterials*, *Nature Communications, PNAS, ISMEJ, Journal of Antimicrobial Chemotherapy, Environmental Microbiology, Science Advances, Nature Microbiology, Science Robotics*

2008- Editorial board of several journals including *Journal of Dental Research* (SAGE Publications, Thousand Oaks, CA)*, Frontiers Cellular & Infection Microbiology* (Frontiers Media SA, Lausanne, Switzerland)*, International Journal Oral Sciences* (Bangalore, India: Nature Publishing Group)*, Molecular Oral Microbiology*

2017 Co-Editor, *Oral Microbiology and Immunology*, ASM Press (3rd edition)

2021- Associate Editor, *Molecular Oral Microbiology,* John Wiley & Sons (Copenhagen)

2022 Co-Editor, *Oral Biofilms in Health and Disease*, Nature Springer (in press)

Organizing Roles in Scientific Meetings

Examples include: 98th General Session of IADR, symposium on Breakthroughs in Precision Therapy for Biofilm Microbiomes and Tissue Regeneration, Washington, DC (2020); 97th General Session of IADR, symposium on Oral Candida: A Hidden Culprit for Dental Caries?, Vancouver, BC, Canada (2019); 95th General Session of IADR, symposium on Revisiting Dental Caries Etiology, San Francisco (2017); 90th General Session of IADR, symposium on Natural Products as Sources of Therapeutic Agents for Oral Diseases Prevention, Iguassu Falls, Brazil (2012); Rochester Conference on Oral Biology: Post-Genomics for the Oral Microbiome, University of Rochester, Rochester, NY (2011); 85th General Session of IADR, symposium on Cariogenic Dental Biofilms, New Orleans, LA (2007)

Memberships in Professional and Scientific Societies

American Association for the Advancement of Science (AAAS)
American Association for Dental Oral Craniofacial Research (AADOCR)
American Chemical Society (ACS)
American Society for Microbiology (ASM)
International Association for Dental Research (IADR)

Other Languages

Fluent in Portuguese, proficient in Korean and Spanish