

**JUSTIN R. KASPAR, PH.D.**  
ASSISTANT PROFESSOR  
DIVISION OF BIOSCIENCES, COLLEGE OF DENTISTRY  
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## A. EDUCATION

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<b>University of Florida</b> ; Gainesville, FL USA Ph.D. in Immunology and Microbiology within College of Medicine Advisor: Robert A. Burne, PhD	2011 – 2016
<b>Texas A&amp;M University</b> ; College Station, TX USA B.S. in Microbiology, Minor in Business Administration <i>Magna Cum Laude</i> and Honors Program Member	2007 – 2011

## B. PUBLICATIONS

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### *Peer Reviewed Publications*

1. **Kaspar, J.**, Godwin, M., Velsko, I., Richards, V., and Burne, R.A. (2019) Spontaneously Arising *Streptococcus mutans* Variants with Reduced Susceptibility to Chlorhexidine Display Genetic Defects and Diminished Fitness. *Antimicrobial Agents and Chemotherapy*. 63(7): e00161-19. #**Corresponding Author**. DOI: [10.1128/AAC.00161-19](https://doi.org/10.1128/AAC.00161-19). PMID: 31036688.
2. Lee, K., Walker, A., Chakraborty, B., **Kaspar, J.**, Nascimento, M., and Burne, R.A. (2019) Exploring Novel Probiotic Mechanisms of *Streptococcus* A12 with Functional Genomics. *Applied and Environmental Microbiology*. 85(21): e01335-19. DOI: [10.1128/AEM.01335-19](https://doi.org/10.1128/AEM.01335-19). PMID: 31420345
3. Shields, R., **Kaspar, J.**, Lee, K., Underhill, S., and Burne, R.A. (2019) Fluorescence tools adapted for real-time monitoring of the behaviors of *Streptococcus* species. *Applied and Environmental Microbiology*. 85(15): e00620-19. +Authors contributed equally to the work. DOI: [10.1128/AEM.00620-19](https://doi.org/10.1128/AEM.00620-19). PMID: 31101614.
4. **Kaspar, J.**, Shields, R. and Burne, R.A. (2018) Competence Inhibition by the XrpA Peptide Encoded Within the *comX* Gene of *Streptococcus mutans*. *Molecular Microbiology*. 109(3):345-364. **F1000Prime Recommended Article**. DOI: [10.1111/mmi.13989](https://doi.org/10.1111/mmi.13989). PMID: 29802741
5. Underhill, S., Shields, R., **Kaspar, J.**, Haider, M., Burne, R. A. and Hagen, S. J. (2018) Intracellular Signaling through the *comRS* System in *Streptococcus mutans* Genetic Competence. *mSphere* 3(5): e00444-18. DOI: [10.1128/mSphere.00444-18](https://doi.org/10.1128/mSphere.00444-18). PMID: 30381353
6. Son, M., **Kaspar, J.**, Ahn, S.-J., Burne, R. A. and Hagen, S. J. (2018) Threshold regulation and stochasticity from the MecA/CipCP proteolytic system in *Streptococcus mutans* competence. *Molecular Microbiology*. 110(6): 914-930. DOI: [10.1101/mmi.13992](https://doi.org/10.1101/mmi.13992). PMID: 29873131
7. **Kaspar, J.**, Underhill, S., Shields, R., Reyes, A., Rosenzweig, S., Hagen, S.J., and Burne, R.A. (2017) Intercellular Communication Via the *comX*-Inducing Peptide (XIP) of *Streptococcus mutans*. *Journal of Bacteriology*. 199(21): 19e00404-17. +Authors contributed equally to the work. **Spotlight Article and Journal Cover**. DOI: [10.1128/JB0404-17](https://doi.org/10.1128/JB0404-17). PMID: 28808131
8. **Kaspar, J.**, Ahn, S.-J., and Burne, R.A. (2016) An Essential Role for (p)ppGpp in the Integration of Stress Tolerance, Peptide Signaling, and Competence Development in *Streptococcus mutans*. *Frontiers in Microbiology*. 7, 1162. DOI: [10.3389/fmicb.2016.01162](https://doi.org/10.3389/fmicb.2016.01162) PMID: 27516759

9. **Kaspar, J.**, Ahn, S-J., Palmer, S., Choi, S.C., Stanhope, M.J., and Burne, R.A. (2015) A Unique ORF within the *comX* gene of *Streptococcus mutans* Regulates Genetic Competence and Oxidative Stress Tolerance. *Molecular Microbiology*. 96(3): 463-482. DOI: [10.1111/mmi.12948](https://doi.org/10.1111/mmi.12948). PMID: 25620525
10. Guo, Q., Ahn, S-J., **Kaspar, J.**, Zhou, X., and Burne, R.A. (2014) Growth Phase and pH Influence Peptide Signaling for Competence Development in *Streptococcus mutans*. *Journal of Bacteriology*. 196(2): 227-236. DOI: [10.1128/JB.00995-13](https://doi.org/10.1128/JB.00995-13). PMID: 24163340
11. Ahn, S-J., **Kaspar, J.**, Kim, J.N., Seaton, K., and Burne, R.A. (2014) Discovery of novel peptides regulating competence development in *Streptococcus mutans*. *Journal of Bacteriology*. 196(21): 3735-3745. DOI: [10.1128/JB.01942-14](https://doi.org/10.1128/JB.01942-14). PMID: 25135217

## Reviews

1. **Kaspar, J.** and Walker, A. (2019) Expanding the Vocabulary of Peptide Signals in *Streptococcus mutans*. *Frontiers in Cellular and Infection Microbiology*. Volume 9: pp: 194. #Corresponding Author DOI: [10.3389/fcimb.2019.00194](https://doi.org/10.3389/fcimb.2019.00194) PMID: 31245303

## C. RESEARCH SUPPORT

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### Pending

**K99/R00**                      **NIH/NIDCR**                      **Kaspar (PI)**                      2020 - 2025  
Interspecies Interactions within Supragingival Plaque  
 This study investigates the contact-dependent responses of disease-causing *Streptococcus mutans* against the health-associated commensal streptococci within the oral cavity. Transcriptomics/metabolomics are incorporated to define the interaction of *S. mutans* between microbes present in states of health and disease.  
 Role: **Principal Investigator**  
 Impact Score: **35**

### Previous

**F32 DE028479**                      **NIH/NIDCR**                      **Kaspar (PI)**                      2018 - 2019  
Ecological Consequences of Cell-to-Cell Signaling on Interbacterial Competition  
 This study investigated the impact of bacterial cell-cell signaling on the fitness of specific bacterial species within microbial oral biofilm communities.  
 Role: **Principal Investigator**

**T90 DE021990**                      **NIH/NIDCR**                      **Burne, R (PI)**                      2016 - 2018  
Comprehensive Training Program in Oral Biology  
 The program provides extensive breadth and depth in training for basic and clinician scientists in multiple areas that are designated as high priority by the NIDCR..  
 Role: **Postdoctoral Fellow Trainee**

**F31 DE024416**                      **NIH/NIDCR**                      **Kaspar (PI)**                      2014 - 2016  
Integration of Stress Tolerance in Competence Development  
 This study investigated a primary stress response pathway (ppGpp and the stringent response) and its effect on competence development. Also investigated the role of XrpA in ComRS signaling.  
 Role: **Principal Investigator**

**5 T90 DE021990-07** **NIH/NIDCR**                      **Burne, R (PI)**                      2012 - 2014  
Comprehensive Training Program in Oral Biology  
 The program provides extensive breadth and depth in training for basic and clinician scientists in multiple areas that are designated as high priority by the NIDCR.  
 Role: **Predocctoral Fellow Trainee**

## D. TEACHING AND MENTORING

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1. **Kimia Zadeh, September 2019 – December 2019.** Current UF undergraduate student planning to attend dental school. Studying dual-species interactions between *S. mutans* and other oral commensal streptococci. Trained in bacterial culture techniques and bacterial assays.
2. **Brook Richard, January 2019 – August 2019.** Former UF undergraduate student majoring in business, planning to attend dental school by applying in Fall 2019. Studying dual-species interactions between *S. mutans* and other oral commensal streptococci. Trained in bacterial culture techniques, bacterial assays and confocal microscopy. Will be included as author on future manuscript.
3. **Matthew Godwin, January 2017 – December 2018.** Former UF undergraduate student majoring in chemical engineering, currently studying at Harvard dental school. Studied antimicrobial resistance in *Streptococcus mutans*, with a focus on chlorhexidine. Trained in bacterial culture techniques, bacterial assays and transposon mutagenesis screen. Research counted for credit and author on *Antimicrobial Agents and Chemotherapy* manuscript.
4. **Sara Rifai, January 2017 – May 2017.** Former UF dental student. Studied protein – protein interactions in *Streptococcus mutans*. Trained in bacterial culture techniques and protein purification.
5. **James Shirley, September 2016 – October 2016.** UF COM Graduate Student. Studied the role of hydrogen peroxide and oxygen stress on competence development signaling in *Streptococcus mutans* for 1<sup>st</sup> year PhD rotation. Trained in bacterial culture techniques, bacterial assays, RNA purification and qRT-PCR.
6. **Adrian Reyes, August 2015 – May 2016.** Current dental student at UF. As an undergraduate researcher, helped develop and studied the co-culture system for competence signaling in *Streptococcus mutans* for undergraduate research. Trained in bacterial culture techniques, flow cytometry, fluorescent and confocal microscopy. Research counted for credit and author on *Journal of Bacteriology* manuscript.
7. **Jacquelyn Serfecz, January 2014 – February 2014.** Former UF COM Graduate Student, Laboratory of Rolf Renne, PhD. Studied the role of RcrRPQ peptides in competence development of *Streptococcus mutans* for 1<sup>st</sup> year PhD rotation. Trained in bacterial culture techniques, bacterial assays, RNA purification and qRT-PCR.

## E. RESEARCH EXPERIENCE

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Assistant Professor, Ohio State College of Dentistry	2020 - current
Postdoctoral Fellow, UF College of Dentistry, Supervisor: Dr. Robert Burne	2016 – 2020
Predocctoral Fellow, UF College of Medicine, Supervisor: Dr. Robert Burne	2011 – 2016
Research Assistant, Microbiology, Supervisor: Dr. Ry Young, Texas A&M University	2010 – 2011
Research Assistant, Microbiology, Supervisor: Dr. Matthew Sachs, Texas A&M University	2010

## F. HONORS AND AWARDS

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Travel Grant Awardee, 2020 IADR Microbiology/Immunology Group Travel Award	2020
Student-Invited Reviewer, UF CTSI Certificate Program Student Journal Club	2018
1 <sup>st</sup> Place Recognition of Research Excellence Poster Presentation, UF Synergy Day	2017
Student Travel Grant Awardee, 6 <sup>th</sup> ASM Conference on Cell-Cell Communication	2017
Student Travel Grant Awardee, 8 <sup>th</sup> ASM Conference on Streptococcal Genetics	2016
Silver medalist, IDP Medical Guild Research Symposium	2016
Interdisciplinary Program in Biomedical Sciences Student Travel Award	2014

## G. UNIVERSITY COMMITTEES AND SERVICE

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Student Representative, Rethinking Graduate Education Committee, UF Health	2015
Student Representative, UF Biomedical Graduate Program Advisory Board	2013 – 2015

## H. SEMINARS, WORKSHOPS AND PROFESSIONAL DEVELOPMENT ATTENDED

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Attendee, Learn-Discover-Lead Professional Development Seminar Series, UF Health	2018 – 2019
Attendee, K College Monthly Seminar Series for Early Stage Investigators, UF CTSI	2018 – 2019
Attendee, Imaging and Quantifying Biofilms Workshop, 8 <sup>th</sup> ASM Biofilms Conference	2018
Attendee, LC-MS Quantitative Proteomics Short Course	2016

## I. PROFESSIONAL MEMBERSHIPS

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American Society of Microbiology (ASM)  
American Society of Dental Research (AADR)

## J. MANUSCRIPT REVIEW

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Journal of Dental Research  
Molecular Microbiology  
mSystems (ASM)  
Frontiers in Microbiology, Frontiers in Cellular and Infection Microbiology

## K. OUTSIDE PRESENTATIONS AND MEETINGS

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Oral Speaker ( <i>Selected</i> ), 2020 IADR/AADR/CADR General Session, Washington D.C., USA	2020
Oral Speaker, 20 <sup>th</sup> International Conference on Bacilli and Gram-positive Bacteria, Maryland, USA	2019
Poster Presenter, 8 <sup>th</sup> ASM Biofilms Conference, Washington D.C., USA	2018
Oral Speaker, 6 <sup>th</sup> ASM Conference on Cell-to-Cell Signaling, Athens, GA, USA	2017
Oral Speaker, 8 <sup>th</sup> ASM Conference on Streptococcal Genetics, Washington D.C., USA	2016
Poster Presenter, ASM General Meeting, Boston, MA, USA	2016
Poster Presenter, ASM General Meeting, New Orleans, LA, USA	2015
Poster Presenter, ASM General Meeting, Boston, MA, USA	2014
Poster Presenter, 4 <sup>th</sup> International Conference on Gram-positive Pathogens, Omaha, NE, USA	2012

## L. SUMMARY OF PUBLICATIONS AND PRESENTATIONS

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Publications: **12**  
First Author Publications: **6**  
Corresponding Author Publications: **2**  
Citations: **144**  
h-index: **6**  
i-index: **4**  
Total Presentations at Conferences (Outside the University): **8**  
Total Oral Presentations (Outside the University): **3**

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