

CURRICULUM VITAE

PERSONAL DATA

Name: Michael Baker Chavez
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EDUCATION

2021-PRES. College of Dentistry, University of Iowa, Iowa City, IA; DDS Student
 2017-PRES. College of Dentistry, Ohio State University, Columbus, OH; PhD Student, Oral Biology
 2009 Department of Biology, College of Charleston, Charleston, SC; BS Biology Minor Environmental Science

PROFESSIONAL EXPERIENCE

2017-present The Ohio State University, College of Dentistry, Division of Biosciences: Graduate Research Fellow
 2016-2017 The Ohio State University, College of Dentistry, Division of Biosciences: Research Assistant II, Dr. Brian Foster's Laboratory
 2014-2016 Medical University of South Carolina, College of Dentistry, Division of Oral Biology: Research Specialist II/Lab manager, Dr. Keith Kirkwood's Laboratory
 2012-2014 Medical University of South Carolina, College of Dentistry, Division of Oral Biology: Research Specialist I/Lab Manager, Dr. Courtney Haycraft's Laboratory
 2011-2012 Arborgen, R&D department, Charleston, SC: Research Assistant

AWARDS AND HONORS

2020 AADR Hatton Competition, *Impaired bone healing in bone sialoprotein knockout mice*. Washington, D.C.
 2020 Ohio State University, College of Dentistry, Paper of the year, Basic Science, "Loss of Discoidin Domain Receptor 1 Predisposes Mice to Periodontal Breakdown. *J Dent Res*
 2020 Ohio State University, College of Dentistry. 2020 Dean's Awards for Excellence in Research Graduate student award, 3rd place
 2020 IADR MTG Outstanding Young Investigator Award. Washington D.C.
 2020 AADR Bloc Travel Grant, IADR/AADR Washington, D.C.
 2019 International Conference on the Chemistry and Biology of Mineralized Tissues (ICCBMT) Young Investigator Award
 2019 AADR Bloc Travel Grant, IADR/AADR/CADR Vancouver, Canada
 2019 Ohio State University, Sigma Xi Annual Banquet poster presentation, 1st place. *Discoidin Domain Receptor 1 (Ddr1) Ablation Predisposes Mice to Periodontitis*.
 2019 Ohio State University, Graduate School. Hayes Forum. Second place oral presentations, biological sciences. *Discoidin Domain Receptor 1 (Ddr1) Ablation Predisposes Mice to Periodontitis*.
 2018 The German Dental Society (DGZMK) best papers of the year from German universities: *Reduzierte kieferorthopädische Zahnbewegung bei Enppl-mutierten Mäusen mit Hyperzementose* reprinted and translated from *Reduced orthodontic*

- tooth movement in Enpp1 mutant mice with hypercementosis. J Dent Res* 97(8):937-945, 2018.
- 2018 Cover image chosen for Ohio State University, Dental School, *Dental Journal*, Volume 6, Issue 1. Spring 2018
- 2018 Ohio State University, College of Dentistry. 2018 Dean's Awards for Excellence in Research Graduate student award, 3rd place

INVITED PRESENTATIONS

1. Evolution of periodontal bone loss measurements with microcomputed tomography
Conference on micro-computed tomography analysis of dental and skeletal tissues, National Institutes of Health, Bethesda, MD, March 2019

BIBLIOGRAPHY

Peer-reviewed publications

1. Chu EY, Vo TD, **Chavez MB**, Nagasaki A, Mertz EL, Nociti FH, Aitken SF, Kavanagh D, Zimmerman K, Li X, Stabach PR, Braddock DT, Millan JL, Foster BL, Somerman MJ. Genetic and Pharmacological Modulation of Cementogenesis via Pyrophosphate Regulators. *Bone*, 2020 Mar 26 [Online ahead of print]. PMID: 32224162
2. Xu H, Lenhart SA, Chu EY, **Chavez MB**, Wimer HF, Dimori M, Somerman MJ, Morello R, Foster BL, Hatch NE. Dental and craniofacial defects in the *Crtap*^{-/-} mouse model of osteogenesis imperfecta type VII. *Dev Dyn*. 2020 Mar 5 [Epub ahead of print]. PMID: 32133710.
3. Zhang H, **Chavez MB**, Kolli TN, Tan MH, Fong H, Chu EY, Li Y, Ren X, Watanabe K, Kim DG, Foster BL. Dentoalveolar Defects in the *Hyp* Mouse Model of X-linked Hypophosphatemia. *J Dent Res*, 2020 Jan 24[Online ahead of print]. PMID: 31977267
4. **Chavez MB**, Kolli TN, Tan MH, Zachariadou C, Wang C, Embree MC, Lira Dos Santos EJ, Nociti FH Jr, Wang Y, Tatakis DN, Agarwal G, Foster BL. Loss of Discoidin Domain Receptor 1 Predisposes Mice to Periodontal Breakdown. *J Dent Res*, 98(13), 1521-1531, 2019. PMID: 31610730 PMCID: PMC6873285
5. Thumbigere-Math V, Foster BL, Bachu M, Yoshii H, Brooks S, **Chavez MB**, Coulter A, Togi S, Neely AL, Deng Z, Mansky KC, Ozato K, Somerman MJ. Inactivating Mutation in IRF8 Promotes Osteoclast Transcriptional Programs and Increases Susceptibility to Tooth Root Resorption. *J Bone Mineral Res*, 34(6):1155-1168, 2019. PMID: 30840779 PMCID: PMC6663587.
6. Hathaway-Schrader JD, Steinkamp HM, **Chavez MB**, Poulides NA, Kirkpatrick JE, Chew ME, Huang E, Alekseyenko AV, Aguirre JI, Novince CM. Antibiotic Perturbation of Gut Microbiota Dysregulates Osteoimmune Cross Talk in Postpubertal Skeletal Development. *Am J Pathol* 189(2): 370-390, 2019. PMID: 30660331. PMCID: PMC6360355
7. Williams DK, Pinzón C, Huggins S, Pryor JH, Falck A, Herman F, Oldeschulte J, **Chavez MB**, Foster BL, White SH, Westhusin ME, Suva LJ, Long CR, Gaddy D. Genetic engineering a large animal model of human hypophosphatasia in sheep. *Sci Rep* 8(1): 16945, 2018. PMID: 30446691. PMCID: PMC6240114.
8. Wolf M, Ao M, **Chavez MB**, Kolli TN, Thumbigere-Math V, Becker K, Chu EY, Jäger A, Somerman MJ, Foster BL. Reduced orthodontic tooth movement in *Enpp1* mutant mice with hypercementosis. *J Dent Res* 97(8):937-945, 2018. PMID: 29533727. PMCID: PMC6728553

9. Steinkamp HM*, Hathaway-Schrader JD*, Chavez MB, Aartun JD, Zhang L, Jensen T, Shojaee Bakhtiari A, Helke KL, Stumpo DJ, Alekseyenko AV, Novince CM, Blackshear PJ, Kirkwood KL. Tristetraprolin Is Required for Alveolar Bone Homeostasis. *J Dent Res* 97(8):946-953, 2018. PMID: 29514008. PMCID: PMC6661319
10. Shin M, **Chavez MB**, Ikeda A, Foster BL, Bartlett JD. MMP20 overexpression disrupts molar ameloblast polarity and migration. *J Dent Res* 97(7): 820-827, 2018. PMID: 29481294. PMCID: PMC6728588
11. Foster BL, Ao M, Salmon CR, **Chavez MB**, Kolli TN, Tran AB, Chu EY, Kantovitz KR, Yadav M, Narisawa S, Millán JL, Nociti FH, Somerman MJ. Osteopontin regulates dentin and alveolar bone development and mineralization. *Bone* 107:196-207, 2018. PMID: 29313816. PMCID: PMC5803363.
12. Thumbigere-Math V, Alqadi A, Chalmers NI, **Chavez MB**, Chu EY, Collins MT, Ferreira CR, FitzGerald K, Gafni RI, Gahl WA, Hsu KS, Ramnitz MS, Somerman MJ, Ziegler SG, Foster BL. Hypercementosis Associated with *ENPP1* Mutations and GACI. *J Dent Res* 97(4):432-441, 2018. PMID: 29244957. PMCID: PMC5863873.
13. Ao M, **Chavez MB**, Chu EY, Hemstreet KC, Yin Y, Yadav MC, Millán JL, Fisher LW, Goldberg HA, Somerman MJ, Foster BL. Overlapping functions of bone sialoprotein and pyrophosphate regulators in directing cementogenesis. *Bone* 105:134-147, 2017. PMID: 28866368. PMCID: PMC5730356.
14. Novince CM, Whittow CR, Aartun JD, Hathaway JD, Poulides N, **Chavez MB**, Steinkamp HM, Kirkwood KA, Huang E, Westwater C, Kirkwood KL. Commensal Gut Microbiota Immunomodulatory Actions in Bone Marrow and Liver have Catabolic Effects on Skeletal Homeostasis in Health. *Sci Rep* 7(1):5747 2017. PMID: 28720797. PMCID: PMC5515851
15. M.S Valerio, D.S. Basilakos, J.E. Kirkpatrick, **M. Chavez**, J. Hathaway-Schrader, B.A. Herbert, K.L. Kirkwood. Sex-based Differential Regulation of Bacterial-induced Bone Resorption. *J Periodontal Res* 52(3)377-387, 2017. PMID: 27509894. PMCID: PMC5303566.

NON-PEER REVIEWED PUBLICATIONS, CONFERENCE PROCEEDINGS, AND EDITORIALS

1. Foster BL, **Chavez MB**, Kramer K, Kolli TN, Tan MH, Narisawa S, Gaddy D, Suva LJ, Whyte MP, Millán JL. Hypophosphatasia and the functional importance of tissue-nonspecific alkaline phosphatase in dentoalveolar tissues. In: Abstracts from the First Scientific Meeting of the Soft Bones Foundation. *JBMR Plus*, S1-S14, 2018. PMID: Pending. PMCID: Pending.

BOOK CHAPTERS

1. Foster BL, **Chavez MB**, Kolli TN, Oldershaw L. Insights into cementogenesis from human disease and genetically engineered mice. In: *Dental Cementum and Anthropology*. Naji S, Rendu, W, Gourichon L (Eds.). 2019, In review.

ABSTRACTS (*Presented abstracts)

1. ***Chavez MB**, Tan M, Kolli T, Goldberg HA, Foster BL. Impaired Alveolar Bone Healing in Bone Sialoprotein Knockout Mice. IADR/AADR, March 2020 (Hatton Competition)
2. ***Chavez MB**, Tan M, Kolli T, Goldberg HA, Foster BL. Bone Sialoprotein is Critical for Bone Healing. Hayes Forum, Ohio State University.
3. Zacharadou, Doshi A, Kolli T, **Chavez MB**, Tan M, Tatakis DN, Foster BL. DDR1 Localizes to Epithelial Leading Edge During Palatal Wound Healing. IADR/AADR, March 2020
4. Kramer K, Tran A, **Chavez MB**, Kolli T, Tan M, Gaddy D, Suva L, Foster BL. Dental Defects Associated with Biallelic Mutations in *ALPL* and hypophosphatasia. IADR/AADR, March 2020

5. Farah FC, Tran AT, Kramer K, **Chavez MB**, Tan M, Kolli T, Millan J, Whyte M, Foster BL. Dental defects associated with clinical subtypes of pediatric hypophosphatasia (HPP). IADR/AADR, March 2020
6. Chu EY, **Chavez MB**, Thumbigere Math V, Aitken SF, Ziegler SG, Ferreira CR, Gafni RI, Foster BL, Somerman M. Dental Manifestations Associated with *ENPP1* and *ABCC6* Mutations. IADR/AADR, March 2020
7. Clayton D, **Chavez MB**, Tan M, Kolli T, Bowden S, Foster BL. Diminished Mineralization in the Primary Dentition from X-linked Hypophosphatemia. IADR/AADR, March 2020
8. Foster BL, **Chavez MB**, Steinkamp HM, Kolli T, Truxal KV, Pastore MT, Fliatz CM, Deng Z, Hammersmith KJ. Enamel Defects in A Family with Presumptive Dentinogenesis Imperfecta. IADR/AADR, March 2020
9. Nagasaki K, Ma M, **Chavez MB**, Ao M, Chu EY, Nagasaki A, Ferebee S, Kear BD, Foster BL, Somerman M. The BSP RGD Domain Regulates Periodontal Ligament Formation During Development. IADR/AADR, March 2020
10. ***Chavez MB**, Tan MH, Kolli TN, Foster BL. Defective alveolar bone healing in mice genetically ablated for bone sialoprotein. ICCBMT, 2019. (Young Investigator Award)
11. Foster BL, **Chavez MB**, Tan MH, Kolli TN, Tran A, Kramer K, Thumbigere-Math V, Chu EY, Ferreira CR, Zhang H, Suva LJ, Gaddy D, Bowden SA, Millan JL, Whyte MP, Somerman MJ. Disparate manifestations of hereditary rachitic disorders in dentoalveolar mineralized tissues. ICCBMT, 2019.
12. Nagasaki A, Tadesse W, Chu EY, Nagasaki K, Nociti FH, **Chavez MB**, Foster BL, Somerman MJ. Cementum regeneration is augmented with loss of ANK and ENPP1. IADR/AADR/CADR, June, 2019.
13. Chu EY, Vo TD, Nagasaki A, **Chavez MB**, Nagasaki K, Kavanagh D, Stabach P, Braddock D, Zhang F, Liu C, Thumbigere-Math V, Somerman MJ, Foster BL. Distinct roles of pyrophosphate regulators, ANK and ENPP1, in cementogenesis. IADR/AADR/CADR, June, 2019.
14. Nagasaki K, **Chavez MB**, Chu EY, Ma M, Alexander RM, Nagasaki A, Vo TD, Tadesse W, Foster BL, Somerman MJ. Bone sialoprotein modulates periodontal complex in conjunction with osteopontin. IADR/AADR/CADR, June, 2019.
15. ***Chavez MB**, Kolli TN, Tan MH, Zachariadou C, Wang C, Embree M, Wang Y, Tatakis DN, Agarwal G, Foster BL. Discoidin Domain Receptor 1 (*Ddr1*) Ablation Predisposes Mice to Periodontitis. IADR/AADR/CADR, June, 2019.
16. Zhang H, **Chavez MB**, Kolli TN, Tan MH, Fong H, Chu EY, Li Y, Ren X, Watanabe K, Kim D-G, Foster BL. Dentoalveolar defects in the *Hyp* mouse model of X-linked hypophosphatemia. IADR/AADR/CADR, June, 2019.
17. Colvin C, **Chavez MB**, Kolli TN, Tan MH, Ikeda A, Bartlett JD, Foster BL. Altered dentinogenesis in mice lacking matrix metalloproteinase 20 (MMP20). IADR/AADR/CADR, June, 2019.
18. Tran A, **Chavez MB**, Kramer K, Tan MH, Suva LJ, Gaddy D, Foster BL. Novel dental effects of hypophosphatasia on mantle dentin mineralization. IADR/AADR/CADR, June, 2019.
19. ***Chavez MB**, Kolli TN, Tan MH, Zachariadou C, Wang C, Embree M, Wang Y, Tatakis DN, Agarwal G, Foster BL. Discoidin Domain Receptor 1 (*Ddr1*) Ablation Predisposes Mice to Periodontitis. Ohio State Graduate Hayes Forum, February, 2019. ****Second place****
20. ***Chavez MB**, Kolli TN, Tan MH, Zachariadou C, Wang C, Embree M, Wang Y, Tatakis DN, Agarwal G, Foster BL. Discoidin Domain Receptor 1 (*Ddr1*) Ablation Predisposes Mice to Periodontitis. Ohio State, College of Dentistry Research Day, February 26, 2019.
21. Tran AT, **Chavez MB**, Kramer K, Tan MH, Suva LJ, Gaddy D, Foster BL. Novel dental effects of hypophosphatasia on mantle dentin mineralization: Case report of a child with

- compound heterozygous *ALPL* mutations. The Ohio State University Denman Undergraduate Research Forum, Columbus, Ohio, February 20, 2019.
22. Tran AT, **Chavez MB**, Kramer K, Tan MH, Suva LJ, Gaddy D, Foster BL. Dental manifestations of the inherited mineralization disorder hypophosphatasia. Ohio Dental Hygienists' Association 95th Annual Session, Columbus, Ohio, November, 2018.
 23. Tran AT, **Chavez MB**, Kramer K, Tan MH, Suva LJ, Gaddy D, Foster BL. Dental manifestations of the inherited mineralization disorder hypophosphatasia. Autumn Undergraduate Research Festival, The Ohio State University, November, 2018.
 24. Chu EY, Nagasaki A, **Chavez MB**, Leigh D, Vo T, Coulter A, Thumbigere-Math V, Braddock D, Somerman MJ, Foster BL. Pyrophosphate regulators, ANK and ENPP1, regulate cementogenesis and extracellular matrix protein expression. ASBMR, September-October, 2018.
 25. **Chavez MB**, Kramer Km Kolli TK, Tan MH, Narisawa S, Gaddy D, Suva LJ, Whyte MP, Millán JL, Foster BL. Hypophosphatasia and the functional importance of tissue-nonspecific alkaline phosphatase in dentoalveolar tissues. Soft Bones Scientific Meeting, Chicago, IL, June, 2018.
 26. **Chavez MB**, Flaitz C, Foster BL, Hammersmith K, Steinkamp HM. Shell Game with Dentinogenesis Imperfecta: Case Report. American Academy of Pediatric Dentistry (AAPD), May, 2018.
 27. Thumbigere-Math V, Alqadi A, Chalmers NI, **Chavez MB**, Chu EY, Collins MT, Ferreira CR, FitzGerald K, Gafni RI, Gahl WA, Hsu KS, Ramnitz MS, Somerman MJ, Ziegler SG, Foster BL. Hypercementosis associated with *ENPP1* mutations and generalized arterial calcification in infancy. AADR/CADR, March, 2018.
 28. Thumbigere-Math V, Coulter A, Foster BL, Ma M, **Chavez MB**, Neely A, Yoshii H, Ozato K, Somerman MJ. Characterization of periodontal tissues in an *Irf8* knock-out mouse model. AADR/CADR, March, 2018.
 29. Nagasaki A, Chu EY, Leigh D, Vo T, **Chavez MB**, Foster BL, Somerman MJ. ANK and ENPP1 have significant roles in cementogenesis. AADR/CADR, March, 2018.
 30. ***Chavez MB**, Nagasaki K, Ao M, Chu EY, Coulter AG, Goldberg HA, Foster BL, Somerman MJ. BSP RGD domain has a role in alveolar bone modulation. AADR/CADR, March, 2018.
 31. ***Chavez MB**, Nagasaki K, Ao M, Chu EY, Coulter AG, Goldberg HA, Foster BL, Somerman MJ. BSP RGD domain has a role in alveolar bone modulation. The Ohio State University College of Dentistry Research Day, February, 2018.
 32. Wang C, Kolli TN, **Chavez MB**, Agarwal G, Foster BL. Expression and functional importance of discoidin domain receptors in dentoalveolar tissues. The Ohio State University Denman Undergraduate Research Forum, April, 2017.
 33. Wang C, Kolli TN, **Chavez MB**, Agarwal G, Foster BL. Expression and functional importance of discoidin domain receptors in dentoalveolar tissues. IADR/AADR/CADR, March, 2017.
 34. Foster BL, Ao M, **Chavez MB**, Kolli TN, Chu EY, Millán JL, Somerman MJ. Coordinated regulation of cementogenesis by matrix and mineralization factors. IADR/AADR/CADR, March, 2017.
 35. Wang C, Kolli TN, **Chavez MB**, Agarwal G, Foster BL. Expression and functional importance of discoidin domain receptors in dentoalveolar tissues. The Ohio State University College of Dentistry Research Day, February, 2017.
 36. "Oral Microbiota has Osteoimmunomodulatory Effects Distinct from the Systemic Microbiome." Primary Author Dr. Chad Novince, International Association for Dental Research. San Francisco, CA. 2017

37. Oral Presentation: "Gut commensal flora, a dynamic osteoimmunomodulator, driving skeletal catabolism in health." Primary Author Dr. Chad Novince, American Association for Dental Research. Los Angeles, CA. 2016
38. Oral and Poster Presentation: "Tristetraprolin is Required for Alveolar Bone Homeostasis." Primary Author Dr. Heidi Steinkamp, International Association for Dental Research. Seoul, KOR. 2016 (Hatton award 2nd place)
39. Oral and Poster Presentation: "Tristetraprolin is Required for Alveolar Bone Homeostasis." Primary Author Dr. Heidi Steinkamp, American Association for Dental Research. Los Angeles, CA. 2016 (Hatton award 2nd place)
40. Oral Presentation: "The Oral Commensal Flora, a Dynamic Regulator of Alveolar Bone Remodeling" Primary Author Dr. Chad Novince, Medical University of South Carolina, Research Day. Charleston, SC. 2016
41. Poster Presentation: "Cilia defects lead to reduced dentin in murine molars" Primary Author Dr. Courtney Haycraft, International Association for Dental Research. Seattle, WA. 2013

Reviewer Section

Journal of Periodontology, *Ad Hoc* reviewer, 2019-present

PROFESSIONAL ORGANIZATIONS AND AFFILIATIONS

American Academy of Pediatric Dentistry (AAPD) 2019-Present

American Dental Education Association (ADEA) 2017-Present

International Association for Dental Research (IADR) 2017-Present

IADR Mineralized Tissue Group 2017-Present

IADR Periodontal Research Group 2017-Present

American Association for the Advancement of Science (AAAS) 2016-Present

COMMITTEES, BOARDS, WORKSHOPS AND ADMINISTRATIVE SERVICE

2019 Graduate Student Representative. College of Dentistry Research Committee. College of Dentistry, Ohio State University, Columbus, OH.

2018 Graduate Student Representative. Student Research Awards Committee. College of Dentistry, The Ohio State University, Columbus, OH.