

## CURRICULUM VITAE

### PERSONAL DATA

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### EDUCATION

2011 Department of Oral Biology, School of Dentistry, University of Washington, Seattle, WA;  
 PhD Oral Biology  
 2000 Department of Biology, Central Michigan University, Mt. Pleasant, MI; MS Microbiology  
 1998 Department of Biology, Central Michigan University, Mt. Pleasant, MI; BS Biology

### PROFESSIONAL EXPERIENCE

2015-present The Ohio State University, College of Dentistry, Division of Biosciences: Assistant Professor  
 2011-2015 National Institute of Health (NIH)/National Institute of Arthritis and Musculoskeletal and Skin Disease (NIAMS): Research Fellow  
 2002-2011 University of Washington: Research Scientist III in the laboratory of Dr. Martha J. Somerman, School of Dentistry, Department of Periodontics.  
 2000-2002 University of Michigan: Research Associate in the laboratory of Dr. Martha J. Somerman, School of Dentistry, Department of Periodontics/Prevention/Geriatics.  
 1999-2000 Central Michigan University: Graduate Research Fellow in the laboratory of Dr. Joy B. Doran, Department of Biology.  
 1998-1999 Central Michigan University: Graduate Research Assistant in the laboratory of Dr. Joy B. Doran, Department of Biology.  
 1995-1998 Central Michigan University: Microbiology Laboratory Assistant for General Microbiology and Bacteriology courses.

### AWARDS AND HONORS

2016 Stazen Junior Award. The Ohio State University College of Dentistry, Columbus, OH (For research excellence in an Assistant or Associate Professor)  
 2016 Invited symposium speaker, Mineralized Tissue Biology Session, "Breakthroughs in postnatal tooth root and cementum formation," 94<sup>th</sup> General Session of the IADR, Seoul, Republic of Korea  
 2016 Oral Session Chair, Mineralized Tissue Biology Session, "The Periodontal Complex," 45th Annual Meeting of the AADR, Los Angeles, CA  
 2016 Invited speaker, The Ohio State University College of Dentistry Research Day, "Periodontal destruction: Insights into tooth attachment," Columbus, OH  
 2015 Cover image chosen for *J Dent Res* 94(5)  
 2015 Oral Session Chair, Mineralized Tissue Biology Session, "Animal models for inherited craniofacial and dental diseases," 44th Annual Meeting of the IADR, Boston, MA

- 2014 National Institutes of Health (NIH) Fellows Award for Research Excellence (FARE) Award, including travel stipend to attend a scientific conference (Abstract in the top 25% of NIH postdoctoral fellow submissions in study section)
- 2014 Paper selected for *Journal Dental Research* Editor's Choice Collection and Special Clinical Research Supplement Issue: Foster BL, Ramnitz MS, Gafni RI, Burke AB, Boyce AM, Lee JS, Wright JT, Akintoye SO, Somerman MJ, Collins MT. *Rare bone diseases and their dental, oral, and craniofacial manifestations*.
- 2014 Association for Bone and Mineral Research (ASBMR) John Haddad Young Investigator Award (accompanied by a travel grant to attend and present at the Advances in Mineral Metabolism (AIMM) conference, Snowmass, CO)
- 2014 Invited to be Oral Session Chair, Mineralized Tissue Biology Session; 43<sup>rd</sup> Annual Meeting of the AADR, Charlotte, NC
- 2013 Cover image chosen for *J Dent Res* 92(8)
- 2013 International Association for Dental Research (IADR) Distinguished Scientist Young Investigator Award
- 2013 Selected to compete in IADR/Unilever Hatton Awards Competition at the 42<sup>nd</sup> Annual Meeting of the AADR and 91<sup>st</sup> General Session & Exhibition of the IADR in Seattle, Washington
- 2013 Winner, postdoctoral category, AADR/Johnson & Johnson Healthcare Products Hatton Awards Competition at the 42<sup>nd</sup> Annual Meeting of the AADR and 91<sup>st</sup> General Session & Exhibition of the IADR in Seattle, WA (9 total competitors chosen from submitted abstracts)
- 2013 Cover image chosen for *J Bone Mineral Res* 28(2)
- 2012 Invited to be Oral Session Chair, Mineralized Tissue Biology Session; 41st Annual Meeting of the AADR, Washington, DC
- 2012 Cover image chosen for *Int J Oral Sci* 4(3)
- 2011 Nominated by Oral Biology Department for UW Distinguished Dissertation Award
- 2011 Gonfalonier for UW School of Dentistry, Commencement ceremony 2011
- 2010 Selected short oral presentation and travel award, Mineralized Tissue Group, AADR/CADR Annual Meeting, Washington, D.C., March, 2010.
- 2009 Distinguished Research Staff Award, University of Washington School of Dentistry
- 2008 Distinguished Research Staff Nominee, University of Washington School of Dentistry
- 2007 Bones and Teeth Gordon Research Conference, invitation for short oral presentation of abstract, Biddeford, ME, 2007
- 2006 American Association of Endodontists/Dentsply International 2006 AAE/Dentsply Resident Award, poster research presentation (co-presenter).
- 2000 American Society for Microbiology Student Travel Grant Award, to present poster at the 100<sup>th</sup> General Meeting of ASM, Los Angeles, CA, May, 2000
- 1999 Norman R. Dzingle Award for Outstanding Scanning Electron Microscope Project.
- 1999-2000 Central Michigan University Graduate Research Fellowship
- 1999 Central Michigan University Graduate Student Research Grant
- 1997 American Society for Microbiology (ASM) Sustaining Member Undergraduate Research Fellowship
- 1996 Olive Hutchinson-Kries Scholarship, Central Michigan University Department of Biology
- 1996 Council on Undergraduate Research (U. of North Carolina) Summer Fellowship (CURSOR)

#### TEACHING AND TRAINING ACTIVITIES

- 2016- Lecturer in DENT 6500 Dental Histology for first year dental students (D1): Class of 110 students.

- 2016-2017 Mentoring undergraduate student Carolyn Wang (The Ohio State University) in Summer Undergraduate Research Fellowship (SURF- OSU Undergraduate Research Office) funded project on the functional importance of DDR1 and DDR2 in tooth development (The Ohio State University, College of Dentistry, Columbus, OH)
- 2015-2016 Mentored undergraduate summer student Laura Zweifler (The Ohio State University) in OSU College of Dentistry Melfi Fellowship funded project on the function of PHOSPHO1 in periodontal development (The Ohio State University, College of Dentistry, Columbus, OH). \* Awarded third place in the OSU Denman Undergraduate Research Forum.
- 2014-2015 Mentored visiting scholar He Xu in 18-month project on transgenic mouse models for studying root development and mineralization (NIAMS/NIH, Bethesda, MD)
- 2012-2014 Mentored post-baccalaureate IRTA trainee Mudita Patel in 2 year-long project on roles of phosphatases in cementum mineralization and high throughput screening of small molecules capable of regulating biomineralization (NIAMS/NIH, Bethesda, MD)
- 2013 Mentored undergraduate pre-engineering student Chelsea Willoughby (George Washington University) in summer project on role of bone sialoprotein in endochondral and intramembranous ossification in the craniofacial region (NIAMS/NIH, Bethesda, MD)
- 2013 Mentored undergraduate pre-dental student Laura Zweifler (The Ohio State University) in summer project on roles of alkaline phosphatase, ectonucleotide pyrophosphatase phosphodiesterases, and PHOSPHO1 in toothroot development and mineralization (NIAMS/NIH, Bethesda, MD)
- 2012-2013 Mentored Medical Research Scholars Program (MRSP) student Nic Snider in year-long project on role of matrix metalloproteinase MT1-MMP in tooth eruption and root formation (NIAMS/NIH, Bethesda, MD). Abstract submitted by Dr. Snider was selected to compete in the Craniofacial Biology Group Competition at the 42<sup>nd</sup> Annual Meeting of the AADR and 91<sup>st</sup> General Session & Exhibition of the IADR in Seattle, Washington (5 total competitors)
- 2012 Mentored undergraduate pre-dental student Laura Zweifler (The Ohio State University) in summer project on roles of alkaline phosphatase and the ectonucleotide pyrophosphatase phosphodiesterase family in tooth root development and mineralization (NIAMS/NIH, Bethesda, MD)
- 2012 Mentored Periodontics graduate student Shatha Bamashmous (2010-2011), who was awarded the 2012 California Society of Periodontists CSP Excellence in Periodontal Research Award for Basic Science (April 2012, Sacramento, CA)
- 2011 Mentored high school student Laura Zweifler (Lynbrook, NY) in summer project for competition in: INTEL International Science and Engineering Fair, IST Science Fair, Long Island Science and Engineering fair (LISEF), and Long Island Junior Science and Humanities Symposium. Project title: "Mapping of PHOSPHO1 during tooth development, in vitro and in vivo" (University of Washington)
- 2011 Guest lecturer on "Periodontium," ORALB 510, University of Washington School of Dentistry
- 2011 Guest lecturer on "Tooth Root Development," ORALB 510, University of Washington School of Dentistry
- 2010 Organized seminar series on "Mineralized tissues in development, adaptation, disease, and regeneration," ORALB 575, University of Washington School of Dentistry
- 2010-2011 Directed undergraduate students in "Undergraduate Research Topics in Oral Biology," ORALB 449
- 2009-2011 Directed graduate students in "Research Techniques in Oral Biology," ORALB 578

2007-2010 Guest lecturer on “Introduction to Stem Cells,” PERIO 575, University of Washington School of Dentistry.

### **INVITED PRESENTATIONS**

For MS, PhD, DMD/PhD students: What's Next?! IADR National Student Research Group (NSRG) Lunch & Learn Symposium Distinguished Faculty Speaker, 95<sup>th</sup> General Session of the IADR, San Francisco, CA, March, 2017.

How HPP affects teeth. Soft Bones Inc., Patient Education Meeting, Columbus, OH, November, 2016.

Regulators of periodontal mineralization. In seminar series: DENT 7920. The Ohio State University, College of Dentistry, Columbus, OH, November, 2016.

Constructing and deconstructing the cementum. Mineralized tissue research interest group. The Ohio State University, College of Dentistry, Columbus, OH, September, 2016.

Extracellular matrix and mineral metabolism in cementum formation. In symposium: Breakthroughs in postnatal tooth root and cementum formation. 94<sup>th</sup> General Session of the IADR, Seoul, Republic of Korea, June, 2016.

Periodontal destruction: Insights into tooth attachment. The Ohio State University, College of Dentistry, Research Day, Columbus, OH, February, 2016

Insights on periodontal development and function from mineralization disorders. The Ohio State University, College of Dentistry, Research Lunch & Learn Series, Columbus, OH, November, 2015.

Studies in dental development and mineralization. The Ohio State University, Anthropology and Bioarchaeology interest group, Columbus, OH, September, 2015.

Lessons on dental mineralization from mouse models of mineralization disorders hypophosphatasia and osteogenesis imperfecta. University of Arkansas for Medical Sciences, Department of Physiology & Biophysics, Little Rock, AR, April, 2015.

Insights on periodontal development and function from mouse models of mineralization disorders. National Institute of Dental and Craniofacial Research (NIDCR) Clinical Research Fellows Meeting, Bethesda, MD, January, 2015.

Key regulators of mineralization in periodontal development and regeneration. The Ohio State University School of Dentistry, Columbus, OH, November, 2014.

Key regulators of mineralization in periodontal development and regeneration. University of Texas Health Sciences Center at San Antonio School of Dentistry, San Antonio, TX, October, 2014.

Key regulators of mineralization in periodontal development and regeneration. University of California San Francisco School of Dentistry, San Francisco, CA, September, 2014.

Effects of hypophosphatasia (HPP) on teeth: What can mouse teeth tell us about HPP? Soft Bones Inc., Patient Education Meeting, Philadelphia, PA, July, 2014.

Mineral metabolism of tooth root cementum. Advances in Mineral Metabolism (AIMM) Meeting, Snowmass, CO, April, 2014.

Key regulators of mineralization in periodontal development and regeneration. Rolanette and Berdon Lawrence Bone Disease Program of Texas seminar series, MD Anderson Cancer Center and Baylor College of Medicine, Houston, TX, February, 2014.

Role(s) of bone sialoprotein (BSP) in bone and tooth mineralization. National Institute of Dental and Craniofacial Research (NIDCR), Craniofacial and Skeletal Diseases Branch (CSDB), Bethesda, MD, January 10, 2014.

Deconstructing cementum. The University of Illinois College of Dentistry Centennial Conference, Chicago, IL, June 16-20, 2013.

Bone Sialoprotein and Osteopontin: SIBLING Rivalry in Periodontal Development. National Institute of Dental and Craniofacial Research (NIDCR), Craniofacial and Skeletal Diseases Branch (CSDB),

Bethesda, MD, October 19, 2012; similar talk with the same title given at Baylor College of Dentistry, Dallas, TX, April 24, 2013.

Roles of SIBLING Proteins in Periodontal Development and Regeneration. FASEB Summer Research Conference on Osteopontin Biology, Saxtons River, VT, August 5-9, 2012.

Defining key regulators of pyrophosphate metabolism in development and regeneration of dental tissues. NIAMS Intramural Research Program Retreat, National Institutes of Health, Bethesda, MD, May-June, 2012.

Introduction to dental stem cells. Lake Washington Dental Hygiene Association, Seattle, WA, September, 2011.

Pyrophosphate: Critical regulator of cementum development and regeneration. University of Michigan School of Dentistry, Ann Arbor, MI, May 26, 2011.

Introduction to stem cells. University of Washington School of Dentistry Student Research Group, Seattle, WA, April 21, 2011.

Phosphate, pyrophosphate and cementum biology. Midwest Connective Tissue Conference, Chicago, IL May 7-8, 2010.

Phosphate metabolism and cementoblasts. University of Washington School of Dentistry Student Research Group, Seattle, WA, November, 2006.

## BIBLIOGRAPHY

### Peer-reviewed publications

1. **Foster BL\***, Kuss P\*, Yadav M, Kolli T, Narisawa S, Lukashova L, Cory E, Sah RL, Somerman MJ, Millán JL. Conditional Alpl ablation phenocopies dental defects of hypophosphatasia. *J Dent Res, ePub ahead of print, August 31, 2016*. PMID: 27582029.
2. Chu EY, Tamasas B, Fong H, **Foster BL**, LaCourse MR, Tran AB, Martin JF, Schutte BC, Somerman MJ, Cox TC. Full spectrum of postnatal tooth phenotypes in a novel Irf6 cleft lip model. *J Dent Res* 95(11):1265-1273, 2016. PMID: 27369589.
3. Salmon CR, Giorgetti AP, Paes Leme AF, Domingues RR, Sallum EA, Alves MC, Kolli TN, **Foster BL**, Nociti FH. Global proteome profiling of dental cementum under experimentally-induced apposition. *J Proteomics* 141:12-23, 2016. PMID: 27095596. PMCID: PMC4908826.
4. Zhao N\*, **Foster BL\***, Bonewald LF. The cementocyte- An osteocyte relative? *J Dent Res*, 95(7): 734-741, 2016. PMID: 27029548. PMCID: PMC4914868.
5. Zweifler LE, Ao M, Yadav M, Kuss P, Narisawa S, Kolli T, Wimer HF, Farquharson C, Somerman MJ, Millán JL, **Foster BL**. Role of PHOSPHO1 in periodontal development and function. *J Dent Res*, 95(7): 742-751, 2016. PMID: 27016531. PMCID: PMC4914864.
6. Xu H\*, Snider TN, Wimer HF, Yamada SS, Yang T, Holmbeck K, **Foster BL**. Multiple essential MT1-MMP functions in tooth root formation, dentinogenesis, and tooth eruption. *Matrix Biol* 52-54:266-283, 2016. PMID: 26780723. PMCID: PMC4875876.
7. Marinovich R\*, Soenjaya Y\*, Wallace GQ, Zuskov A, Dunkman A, **Foster BL**, Ao M, Lam V, Rizkalla A, Beier F, Somerman MJ, Holdsworth D, Soslowsky L, Lagugn e-Labarthe F, Goldberg HA. The Role of Bone Sialoprotein in the Tendon-Bone Insertion. *Matrix Biol* 52-54:325-338, 2016. PMID: 26826499. PMCID: PMC4875796.
8. Neely AL, Thumbigere-Math V, Somerman MJ, **Foster BL**. A familial pattern of multiple idiopathic cervical root resorption with a 30-year follow-up. *J Periodontol*, 87(4): 426-433, 2015. PMID: 26561999. PMCID: PMC4902003.
9. Zhao N, Nociti FH, Jr., Duan P, Prideaux M, Zhao H, **Foster BL**, Somerman MJ, Bonewald LF. Isolation and functional analysis of an immortalized murine cementocyte cell line, IDG-CM6. *J Bone Mineral Res* 31(2):430-42, 2015. PMID: 26274352. PMCID: PMC4827449.

10. Wang L, Tran AB, Nociti, FH, Jr., Thumbigere-Math V, **Foster BL**, Krieger CC, Kantovitz KR, Novince CM, Koh AJ, McCauley LK, Somerman MJ. PTH and vitamin D repress DMP1 in cementoblasts. *J Dent Res* 94(10):1408-16, 2015. PMID: 26276370; PMCID: PMC4577985.
11. Soenjaya Y\*, **Foster BL\***, Nociti, Jr. FH, Ao M, Aubin JE, Holdsworth DW, Hunter GK, Somerman MJ, Goldberg HA. Mechanical forces exacerbate periodontal defects in *Bsp* null mice. *J Dent Res* 94(9):1276-85, 2015. PMID: 26130257; PMCID: PMC4547315.
12. **Foster BL**, Ao M, Willoughby C, Soenjaya Y, Holm E, Lukashova L, Tran AB, Wimer HF, Zervas PM, Nociti, Jr. FH, Kantovitz KR, Quan B, Sone ED, Goldberg HA, Somerman MJ. Mineralization defects in cementum and craniofacial bone from loss of bone sialoprotein. *Bone* 78:150-164, 2015. PMID: 25963390; PMCID: PMC4466207.
13. **Foster BL\***, Sheen CR\*, Hatch NE, Liu J, Cory E, Narisawa S, Kiffer-Moreira T, Sah RL, Somerman MJ, Millán JL. Periodontal defects in the A116T knock-in mouse model of odontohypophosphatasia. *J Dent Res* 94(5):706-14, 2015. PMID: 25716980; PMCID: PMC4502784.
14. Wang L, Kantovitz KR, Cullinane A, Nociti FH, **Foster BL**, Roney J, Tran AB, Introne WJ, Somerman MJ. Skin fibroblasts of individuals with Chediak-Higashi Syndrome (CHS) exhibit hyposensitive immunogenic response. *Orphanet J Rare Dis*, 21(9):212, 2014. PMID: 25528552; PMCID: PMC4296684.
15. Gasque K\*, **Foster BL\***, Kuss P\*, Yadav MC, Liu J, Kiffer-Moreira T, Hatch NE, Somerman MJ, Millán JL. Improvement of the skeletal and dental phenotype in *Alpl<sup>-/-</sup>* mice by administration of non-targeted chimeric alkaline phosphatase. *Bone*, 72:137-147, 2015. PMID: 25433339.
16. Zweifler LE, Patel MK, Nociti FH, Wimer HF, Millán JL, Somerman MJ, **Foster BL**. Counter-regulatory phosphatases TNAP and NPP1 temporally regulate tooth root cementogenesis. *Int J Oral Sci* 7(1):27-41, 2014. PMID: 25504209.
17. Wang L, **Foster BL**, Kram V, Nociti FH, Zervas PM, Tran AB, Young MF, Somerman MJ. Fibromodulin and biglycan modulate periodontium through TGF $\beta$ /BMP signaling. *J Dent Res* 93(8):780-787, 2014. PMID: 24966230.
18. **Foster BL**, Ramnitz MS, Gafni RI, Burke AB, Boyce AM, Lee JS, Wright JT, Akintoye SO, Somerman MJ, Collins MT. Rare bone diseases and their dental, oral, and craniofacial manifestations. *J Dent Res*, 93(7 suppl):7S-19S, 2014. PMID: 24700690.
19. Nociti FH, Jr., **Foster BL**, Tran AB, Dunn D, Presland RB, Wang L, Bhattacharyya N, Collins MT, Somerman MJ. Vitamin D represses dentin matrix protein 1 in cementoblasts and osteocytes. *J Dent Res*, 93(2):148-54, 2014. PMID: 24334408.
20. **Foster BL**, Nociti FH, Jr. Somerman M. The rachitic tooth. *Endocr Rev*, 35(1):1-34, 2014. PMID: 23939820.
21. Salmon CR, Tomazela DM, Ruiz KGS, **Foster BL**, Leme AFP, Sallum EA, Somerman MJ, Nociti FH, Jr. Proteomic analysis of human dental cementum and alveolar bone. *J Proteomics* 91:544-555, 2013. PMID: 24007660.
22. Martins L, Rodrigues TL, Ribeiro MM, Saito MT, Giorgetti AP, Casati MZ, Sallum EA, **Foster BL**, Somerman MJ, Nociti FH, Jr. Novel ALPL genetic alteration associated with an odontohypophosphatasia phenotype. *Bone*, 56(2):390-397, 2013. PMID: 23791648.
23. McKee MD, Yadav MC, **Foster BL**, Somerman MJ, Farqharson C, Millán JL. Compounded PHOSPHO1/ALPL deficiencies reduce dentin mineralization. *J Dent Res* 92(8):721-727, 2013. PMID: 23694930.
24. **Foster BL**, Soenjaya Y, Nociti, Jr. FH, Holm E, Zervas PM, Wimer H, Holdsworth DW, Aubin J, Hunter GK, Goldberg HA, Somerman MJ. Deficiency in acellular cementum and periodontal attachment in *Bsp* null mice. *J Dent Res* 92(2): 166-172, 2013. PMID: 23183644.

25. Lau WL, Linnes M, Chu EY, **Foster BL**, Bartley BA, Somerman MJ, Giachelli CM. High phosphate feeding promotes mineral and bone abnormalities in mice with chronic kidney disease. *Nephrol Dial Transplant* 28(1):62-69, 2013. PMID: 23045434.
26. **Foster BL\***, Nagatomo KJ\*, Tso HW, Tran AB, Nociti FH, Jr., Narisawa S, McKee MD, Millán JL, and Somerman MJ. Tooth root dentin mineralization defects in a mouse model of hypophosphatasia. *J Bone Mineral Res* 28(2):271-282, 2013. PMID: 22991301.
27. **Foster BL**. Methods for studying tooth root cementum by light microscopy. *Int J Oral Sci* 4(3):119-28, 2012. PMID: 22996273.
28. Rodrigues TL, **Foster BL**, Silverio KG, Martins L, Casati MZ, Sallum EA, Somerman MJ, Nociti FH, Jr. Hypophosphatasia-associated deficiencies in mineralization and gene expression in cultured dental pulp cells obtained from human teeth. *J Endod* 38(7):907-912, 2012. PMID: 22703652.
29. **Foster BL**, Nagatomo KJ, Nociti FH, Jr., Fong H, Dunn D, Tran AB, Wang W, Narisawa S, Millan JL, and Somerman MJ. Central role of pyrophosphate in acellular cementum formation. *PLoS ONE*, 7(6):e38393, 2012. PMID: 22675556.
30. Rodrigues TL, **Foster BL**, Silverio KG, Martins L, Casati MZ, Sallum EA, Somerman MJ, Nociti FH, Jr. Correction of hypophosphatasia (HPP) associated mineralization deficiencies *in vitro* by phosphate/pyrophosphate modulation in periodontal ligament cells. *J Periodontol*, 83(5): 653-63, 2012. PMID: 22014174.
31. Yadav M, de Oliverira RC, **Foster BL**, Fong H, Cory E, Narisawa S, Sah RL, Somerman M, Whyte M, Millán JL. Enzyme replacement prevents enamel defects in hypophosphatasia mice. *J Bone Mineral Res*, 27(8):1722-34, 2012. PMID: 22461224.
32. Silverio K, Davidson K, James R, Adams A, **Foster BL**, Nociti F, Somerman MJ, and Moon R. The Wnt/ $\beta$ -catenin pathway regulates Bmp2-mediated differentiation of dental follicle cells along a cementoblast / osteoblast pathway. *J Periodontal Res*, 47(3): 309-19, 2012. PMID: 22150562.
33. Rodrigues TL, Nagatomo KJ, **Foster BL**, Nociti FH, Jr., and Somerman MJ. Modulation of phosphate/pyrophosphate metabolism to regenerate the periodontium. A novel *in vivo* approach. *J Periodontol*, 82(12): 1757-66, 2011. PMID: 21488756.
34. Tada H, Nemoto E, **Foster BL**, Somerman MJ, and Shimauchi H. Phosphate increases bone morphogenetic protein-2 expression through cAMP-dependent protein kinase and ERK1/2 pathways in human dental pulp cells. *Bone*, 48(6):1409-16, 2011. PMID: 21419244.
35. **Foster BL**, Nagatomo KJ, Tompkins KA, Fong H, Dunn D, Chu EY, Guenther C, Kingsley DM, Rutherford RB, and Somerman MJ. The progressive ankylosis protein (ANK) regulates cementum apposition and extracellular matrix composition. *Cells Tissues Organs*, 194(5):382-405, 2011. PMID: 21389671.
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37. Chu EY, Fong H, Blethen FA, Tompkins KA, **Foster BL**, Yeh KD, Nagatomo KJ, D. Matsa-Dunn D, Sitara D, Lanske B, Rutherford RB, and Somerman MJ. Ablation of systemic phosphate regulating gene fibroblast growth factor 23 (*Fgf23*) compromises the dentoalveolar complex. *Anat Rec* 293(7): 1214-26, 2010. PMID: 20583265.
38. Lee M, Chu E, El-Abbadi M, **Foster B**, Tompkins K, Giachelli C, Somerman M. Characterization of mandibular bone in a mouse model of chronic kidney disease. *J Periodontol* 81: 300-309, 2010. PMID: 20151810.
39. Fong H, Chu EY, Tompkins KA, **Foster BL**, Nociti FH, Sitara D, Lanske B, and Somerman MJ. Aberrant cementum phenotype associated with hypophosphatemic *Hyp* mouse. *J Periodontol* 80: 1348-54, 2009. PMID: 19656036.
40. Fong H, **Foster BL**, Sarikaya M, Somerman MJ. Structure and mechanical properties of *Ank/Ank* mutant mouse dental tissues – An animal model for studying periodontal regeneration. *Arch Oral*

- Biol* 54(6):570-576, June, 2009. PMID: 19338977.
41. Fatherazi S, Matsa-Dunn D, Rutherford B, **Foster B**, Somerman MJ, Presland R. Phosphate regulates osteopontin gene transcription. *J Dent Res* 88(1):39-44, January 2009. PMID: 19131315.
  42. Nagatomo KJ, Tompkins KA, Fong H, Zhang H, **Foster BL**, Chu EY, Murakami A, Stadmeier L, Canalis E, Somerman MJ. Transgenic overexpression of gremlin results in developmental defects in enamel and dentin in mice. *Connective Tissue Res* 49:6,391-400, 2008. PMID: 19085239.
  43. **Foster BL**, Tompkins KA, Rutherford RB, Zhang H, Chu EY, Fong H, Somerman M. Phosphate: Known and potential roles during development and regeneration of teeth and supporting structures. *Birth Defects Research Part C: Embryo Today* 84:281-314, 2008. PMID: 19067423.
  44. Sato S, Kitagawa M, Sakamoto K, Iizuka S, Kudo Y, Ogawa I, Miyauchi M, Chu EY, **Foster BL**, Somerman MJ, Takata T. Enamel matrix derivative exhibits anti-inflammation properties in monocytes. *J Periodontol*, 79(3) 535-540, 2008. PMID: 18315437.
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  46. Rutherford R, **Foster BL**, Bammler T, Beyer D, Sato S, Somerman MJ. Extracellular phosphate alters cementoblast gene expression. *J Dent Res* 85(6):505-509, 2006. PMID: 16723645.
  47. Swanson EC, Fong HK, **Foster BL**, Paine ML, Gibson CW, Snead ML, Somerman MJ. Amelogenins regulate expression of genes associated with cementoblasts in vitro. *Eur J Oral Sci* 114 Suppl 1:239-43, 2006. PMID: 16674692.
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  49. **Foster BL**, Somerman MJ. Regenerating the Periodontium: Is there a magic formula? *Orthod Craniofac Res* 8(4):285-91, 2005. PMID: 16238609.
  50. Popowics T, **Foster BL**, Swanson EC, Fong HK, Somerman MJ. Defining the roots of cementum formation. *Cells Tissues Organs* 181(3-4):248-57, 2005. PMID: 16612090.
  51. Chun YHP, **Foster BL**, Lukasavage PA, Berry JE, Zhao M, Tenenbaum HC and Somerman MJ. Bisphosphonate modulates cementoblast behavior in vitro. *J Periodontol* 76(11):1890-1900, 2005. PMID: 16274308.
  52. Fong HK, **Foster BL**, Popowics TE, Somerman MJ. The crowning achievement: Getting to the root of the problem. *J Dent Educ* 69(5):555-570, 2005. PMID: 15897336.
  53. **Foster BL**, Nociti FH, Jr., Swanson EC, Matsa-Dunn D, Berry JE, Cupp CJ, Zhang P, Somerman MJ. Regulation of SIBLING family genes by phosphate in cementoblasts. Proceedings of the 8th International Conference on the Chemistry and Biology of Mineralized Tissues, 2005.
  54. Nociti F, **Foster BL**, Barros S, Darveau R Somerman MJ. Cementoblast gene expression is regulated by porphyromonas gingivalis lipopolysaccharide partially via toll-like receptor-4/MD-2. *J Dent Res* 83(8): 602-607 2004. PMID: 15271967.
  55. Berry JE, Zhao M, Jin Q, **Foster BL**, Viswanathan H, Somerman MJ. Exploring the origins of cementoblasts and their trigger factors. *Conn Tissue Res* 44(Suppl.1): 1-6, 2003. PMID: 12952181.
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100. \*Doran JB, Cripe J, Sutton M, **Foster BL**. Comparison of pectin-rich sugar beet pulp fermentations with ethanologenic *Escherichia coli* KO11, *Erwinia chrysanthemi* EC16, and *Klebsiella oxytoca* P2.98<sup>th</sup> General Meeting of the American Society for Microbiology, Atlanta, GA, May 17-21, 1998.
101. \*Cripe JB, **Foster B**, Sutton M, Doran J. Comparison of ethanol produced from sugar beet pulp by genetically engineered *Erwinia chrysanthemi*, *Escherichia coli*, and *Klebsiella oxytoca*. 53<sup>rd</sup> Fall Scientific Meeting of the Midland Section of the American Chemical Society, CMU, Mt. Pleasant, MI, Nov. 1, 1997.
102. Doran JB, Cripe JC, Sutton M, Riley E, Kuehnlein T, West R, **Foster B**. Ethanol production from sugar beet pulp using genetically engineered bacteria. 97<sup>th</sup> General Meeting of the American Society for Microbiology, Miami Beach, FL, May 4-8, 1997.

#### **PROFESSIONAL ORGANIZATIONS AND AFFILIATIONS**

American Dental Education Association (ADEA)  
 International Association for Dental Research (IADR)  
 IADR Mineralized Tissue Group  
 IADR Periodontal Research Group  
 American Society for Bone and Mineral Research (ASBMR)

#### **EDITORSHIP**

*Journal of Dental Research*, Editorial Board, 2017-2019  
*Journal of the Dental Association of Thailand*, Editorial Board, June 2013-ongoing  
 Invited lead guest editor, *Biomed Research International* special issue on "Development, Disease, and Regeneration of Tissues in the Dental-Craniofacial Complex," publication date: Summer, 2013  
 [http://www.hindawi.com/journals/bmri/si/241538/]

#### **PEER REVIEW SERVICE (All ongoing)**

*Journal of Dental Research*, *ad hoc reviewer*  
*Journal of Bone and Mineral Research*, *ad hoc reviewer*  
*Bone*, *ad hoc reviewer*  
*Journal of Periodontology*, *ad hoc reviewer*  
*Journal of Periodontal Research*, *ad hoc reviewer*  
*European Journal of Oral Sciences*, *ad hoc reviewer*  
*International Journal of Oral Science*, *ad hoc reviewer*

Archives of Oral Biology, *ad hoc reviewer*  
 Oral Diseases, *ad hoc reviewer*  
 International Journal of Paediatric Dentistry, *ad hoc reviewer*  
 Matrix Biology, *ad hoc reviewer*  
 Connective Tissue Research, *ad hoc reviewer*  
 Calcified Tissue International, *ad hoc reviewer*  
 Development, *ad hoc reviewer*  
 PLoS ONE, *ad hoc reviewer*  
 The Anatomical Record, *ad hoc reviewer*  
 Stem Cell Research, *ad hoc reviewer*  
 Medical Genetics & Genomic Medicine, *ad hoc reviewer*  
 Journal of Cellular Biochemistry, *ad hoc reviewer*  
 Journal of Molecular Histology, *ad hoc reviewer*  
 Cell Biochemistry and Biophysics, *ad hoc reviewer*  
 Scientific Reports, *ad hoc reviewer*  
 International Journal of Biological Sciences, *ad hoc reviewer*  
 Australian Orthodontic Journal, *ad hoc reviewer*  
 Saudi Medical Journal, *ad hoc reviewer*  
 Journal of the Dental Association of Thailand, *ad hoc reviewer*

#### **GRANT REVIEW SERVICE**

National Institutes of Health (NIH)  
 National Institute of Dental and Craniofacial Research (NIDCR)  
 DSR Special Grants Review Committee  
 2016-2019

Czech Science Foundation (GACR)  
 Study section on basic biological research  
 2015-ongoing

#### **COMMITTEES, BOARDS, WORKSHOPS AND ADMINISTRATIVE SERVICE**

2016 Alexion Pharmaceuticals Dental Advisory Board on Hypophosphatasia, Prague, Czech Republic  
 2016-2019 Graduate Studies Committee, College of Dentistry, The Ohio State University, Columbus, OH  
 2015-2018 Research Committee, College of Dentistry, The Ohio State University, Columbus, OH  
 2015-2018 IADR Mineralized Tissue Group Secretary/Treasurer  
 2007 Member, University of Washington School of Dentistry Website Roundtable

#### **RESEARCH PROJECTS (Ongoing)**

##### **Principal investigator:**

Dentoalveolar disease associated with hypophosphatasia (HPP)  
 Funding: Soft Bones, Inc (Foundation seed grant)  
 Period: 2016-2017

The specific aims of this project are:

1. To coordinately analyze dentoalveolar development in available and novel mouse models for HPP
2. To analyze efficacy of times intervention recombinant TNAP therapy on development and function of dentoalveolar tissues in a mouse model of HPP

Defining the functional role of cementocytes in dental cementum formation and adaptation

Co-PI: Francisco H. Nociti, UniCamp, Piracicaba, Brazil

Funding: OSU College of Dentistry Seed Grant (to fund project costs); FAPESP-OSU research mobility award (to fund travel for Dr. Nociti to work in the Foster lab at OSU for the project)



Period: 2016-2017

The specific aims of this project are:

1. Determine whether cementocytes are necessary for new cellular cementum apposition
2. Confirm cementocyte transcriptomic/proteomic changes in response to experimentally-induced apposition

Extracellular matrix and phosphate/pyrophosphate metabolism in cementum formation

Funding: R00 AR066110-01; PI in mentored pathway to independence grant (NIH/NIAMS)

Period: 2015-2018

The specific aims of this project are:

1. To determine the function of BSP in cementogenesis using in vivo and in vitro approaches
2. To determine the importance of sodium-phosphate co-transporter PiT1 in dental development

### **Actively collaborating on:**

Effect of osteogenesis imperfecta on periodontal development and function

Principal Investigators: Martha Somerman (NIAMS/NIH), Brian L. Foster (The Ohio State University, Columbus, OH), Joan Marini (NICHD/NIH), Janice Lee (NIDCR/NIH), Adele Boskey and Cathleen Raggio (Hospital for Special Surgery, New York, NY), Jay Shapiro (Kennedy Krieger Institute, Johns Hopkins University), Kostas Verdelis (University of Pittsburgh, Pittsburgh, PA), Roy Morello (University of Arkansas, Little Rock, AR)

Funding: NIAMS/NIH intramural

Period: 7/14-

The specific aims of this project are:

1. To identify effects of several OI-related mutations/gene knock-outs on periodontal development. Models to be analyzed include *Brtl* (*Col1a1* mutation), *OIM* (*Col1a2* mutation), Amish (*Col1a2* mutation), *Ppib* null, and *Crtap* null mice.
2. To correlate OI-related changes in mouse dentition to human dentition, including archived radiographs and extracted teeth, and periodontal examination at the NIDCR clinic

Genetic analysis of hereditary idiopathic external tooth root resorption

Principal Investigators: Martha Somerman (NIAMS/NIH), Brian L. Foster (OSU), Anthony Neely (Detroit Mercy, Detroit, MI), Keiko Ozato (NICHD/NIH), Vivek Thumbigere-Math (NIAMS/NIH)

Funding: NIAMS/NIH intramural

Period: 10/12-

The specific aims of this project are:

1. To identify genes associated with hereditary forms of idiopathic external tooth root resorption
2. To analyze tooth structure and gene function to understand mechanisms of action underlying root resorption

Role of Extracellular Matrix Proteins in Tooth Root Mineralization

Intramural: NIAMS/NIH Research Fellow

Principal Investigators: Martha Somerman (NIH/NIAMS), Harvey Goldberg (U. Western Ontario, London, ON, CA), and Jose Luis Millan (Sanford-Burnham Institute, La Jolla, CA)

Funding: NIAMS/NIH intramural

Period: 10/11-

The specific aims of this project are:

1. To determine the roles of BSP and OPN during cementogenesis, using in vivo and in vitro models
2. To determine whether modulating BSP or OPN would provide greater cementum regeneration.

### Role of Pyrophosphate in Regulating Dental Tissues

Intramural: NIAMS/NIH Research Fellow

Principal Investigator: Martha Somerman (NIH/NIAMS)

Funding: NIAMS/NIH intramural

Period: 10/11-

The specific aims of this project are:

1. To determine the role of ANK, NPP1, and TNAP during cementogenesis,
2. To prove that pyrophosphate metabolism is a central regulator of cementogenesis,
3. To determine whether modulating pyrophosphate at periodontal healing sites results in enhanced cementum mineralization.

### **RESEARCH PROJECTS (Completed)**

Extracellular matrix and phosphate/pyrophosphate metabolism in cementum formation

Funding: K99 AR066110-01; PI in K99 phase of mentored pathway to independence grant (NIH/NIAMS)

Period: 2014-2015

The specific aims of this project are:

1. To determine the function of BSP in cementogenesis using in vivo and in vitro approaches
2. To determine the importance of sodium-phosphate co-transporter PiT1 in dental development

### Role of PHOSPHO1 in periodontal mineralization

Intramural: NIAMS/NIH Research Fellow

Principal Investigator: Martha Somerman (NIH/NIAMS) and Jose Luis Millán (Sanford Burnham Institute, La Jolla, CA)

Funding: NIAMS/NIH intramural

Period: 10/11-3/16

The specific aims of this project are:

1. To define expression of PHOSPHO1 in periodontal development
2. To analyze postnatal importance of PHOSPHO1 in periodontal formation and mineralization using Phospho1 null mice
3. To determine pathogenic role of OPN in pathology of Phospho1 null mice

### Function of MT-MMP1 in Tooth Eruption and Periodontal Ligament Development

Intramural: NIAMS/NIH Research Fellow

Principal Investigators: Brian Foster and Kenn Holmbeck (NIH/NIDCR)

Funding: NIAMS/NIH intramural

Period: 1/12-1/16

The specific aims of this project are:

3. To determine the role of MT1-MMP in tooth root formation and eruption
4. To elucidate the role of collagen metabolism in periodontal ligament formation

### Interactions of vitamin D, parathyroid hormone (PTH), and phosphate metabolic regulators in skeletal and dental mineralization

Intramural: NIAMS/NIH Research Fellow

Principal Investigators: Martha Somerman (NIH/NIAMS)

Funding: NIAMS/NIH intramural

Period: 9/09-10/15

The specific aims of this project are:

1. To determine direct and indirect effects of vitamin D on mineralization regulators
2. To determine direct and indirect effects of PTH on mineralization regulators
3. To clarify interactions between vitamin D, PTH, FGF23, DMP1, and PHEX in skeletal and dental cell differentiation and mineralization

#### Mechanisms for immune deficiency in Chediak-Higashi Syndrome (CHS)

Intramural: NIAMS/NIH Research Fellow

Principal Investigators: Martha Somerman (NIAMS/NIH), Wendy Introne (NHGRI/NIH)

Funding: NIAMS/NIH intramural

Period: 10/11-6/15

The specific aims of this project are:

1. To analyze periodontal manifestations of CHS in human subjects
2. To define molecular mechanism for immune deficiency contributing to skin and gingival infections in subjects with CHS

#### Role of Small Leucine Rich Proteoglycans in Periodontal Development and Maintenance

Intramural: NIAMS/NIH Research Fellow

Principal Investigators: Martha Somerman (NIH/NIAMS) and Marian Young (NIH/NIDCR)

Funding: NIAMS/NIH intramural

Period: 9/09-6/14

The specific aims of this project are:

1. To determine the effect of loss of fibromodulin and biglycan on periodontal development
2. To define the role of asporin in periodontal cells
3. To elucidate structure-function relationship between periodontal tissues in the absence of matrix proteoglycans

#### Key Modulators of Cementogenesis (ARRA)

Funding: R01 DE15109-06S1

Principal investigator: Martha Somerman (University of Washington, Seattle, WA)

Agency: NIH

Period: 9/25/09-08/30/12

This is a competitive revision with the additional hypothesis: The ratio of tissue Pi/PPi regulates cementum mineralized tissue apposition as well as composition of cementum extracellular matrix proteins, with an added aim address this hypothesis.

Aim: To determine the mechanism of Pi/PPi regulation of matrix mineralization and gene/protein expression during tooth root cementogenesis.

#### Key Modulators of Cementogenesis

Funding: R01 DE15109

Principal investigator: Martha Somerman (University of Washington, Seattle, WA)

Agency: NIH/NIDCR

Period: 04/01/08-10/12/12

The specific aims of this project are:

1. To determine the role of ANK, PHEX and FGF-23 during cementogenesis versus root dentinogenesis,
2. To prove that phosphate modulation of expression of specific transcription factors controls the cementoblast phenotype, and
3. To determine whether increasing local levels of Pi at healing sites results in enhanced mineralization.

### Phosphate Modulation of Dental Tissues

Funding: R03TW007590-01

Principal investigator: Martha Somerman (University of Washington, Seattle, WA)

Co-Investigator: Francisco H. Nociti, Jr., PhD, DDS (University of Campinas, Piracicaba, Brazil)

Agency: NIH

Period: 07/15/06-06/30/09

The specific aims of this project are:

1. To determine basal differences in gene/protein expression in pulp vs. PDL cells,
2. To determine the effect that  $P_i$  treatment exerts on pulp vs. PDL cells, *in vitro*; and
3. To demonstrate that knocking down TNAP function in pulp and PDL cells harvested from healthy subjects results in a more dramatic change in PDL vs. pulp cell behavior, *in vitro*.

### Key Modulators of Cementogenesis

Funding: R01 DE15109

Principal investigator: Martha Somerman (University of Michigan, Ann Arbor, MI; University of Washington, Seattle, WA)

Agency: NIH/NIDCR

Period: 05/15/03-03/31/08

The specific aims of this project are:

1. To establish the role of *Ank* in modulating genes associated with cementum formation, *in situ*.
2. To identify the temporal expression of mineral associated genes in cementoblasts exposed to phosphate *in vitro* and the phosphate specific promoter regions and transcription factors associated with the OPN promoter determined.
3. To prove that modulating the levels of  $PP_i/P_i$  at sites of periodontal wound healing using a rodent window defect will promote cementum formation.

### Expression of Attachment Proteins during Cementogenesis

Funding: R01 DE09532

Principal investigator: Martha Somerman (University of Michigan, Ann Arbor, MI; University of Washington, Seattle, WA)

Agency: NIH/NIDCR

Period: 09/30/98-05/31/08

The specific aims of this project are:

1. To define the properties of cementoblast populations, *in vitro* and to establish the regulators of cementoblast function including ability to promote mineralization, *in vitro* and in SCID mice. Regulators being examined include PTHrP, PTH/PTHrP-RI, BSP and BMP-3 and
2. To delineate BSP promoter sequences and related transcription factors controlling cementum-specific expression of BSP.

### Continued Investigations on Mechanisms/Factors Regulating Resorption and Repair in Feline 'Neck' Lesions

Principal investigator: Martha Somerman (University of Michigan, Ann Arbor, MI; University of Washington, Seattle, WA)

Funding: Nestec Ltd.- Friskies

Type: Industry grant

Period: 05/06/99-05/05/05

The specific aims of this project are:

To identify potential etiological factors in feline idiopathic tooth resorption through analysis of effects of nutritional and systemic components on particular cells of the oral tissues, namely cementoblasts, osteoblasts, and osteoclasts and co-cultures.