

CURRICULUM VITAE

ALEJANDRO JOSE ALMARZA, Ph.D.

**Associate Professor
Department of Oral Biology
School of Dental Medicine
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I. GENERAL INFORMATION

A. Personal Data

Office Address: 566 Salk Hall
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Ethnicity: Hispanic

B. Education

| <u>Dates Attended</u> | <u>Institution</u> | <u>Degree Received (Year)</u> | <u>Major (Advisor)</u> |
|-----------------------|--|-------------------------------|--|
| 2001-2005 | Rice University Houston, TX | Ph.D. (2005) | Bioengineering (K.A. Athanasiou, Ph.D.) |
| 1998-2001 | Florida State University Tallahassee, FL | B.S. (2001) | Chemical Engineering |
| 1996-1998 | Central Missouri State U. Warrensburg, MO | | Engineering Core |

C. Academic Appointments

| <i>Years Inclusive</i> | <i>Name and Location Of Institution of Organization</i> | <i>Rank/Title</i> |
|------------------------|--|--|
| 2014-Present | Department of Oral Biology University of Pittsburgh | Associate Professor |
| 2014-Present | Department of Bioengineering University of Pittsburgh | Associate Professor |
| 2008-2014 | Department of Oral Biology University of Pittsburgh | Assistant Professor |
| 2008-2014 | Department of Bioengineering University of Pittsburgh | Assistant Professor |
| 2008-Present | McGowan Institute of Regenerative Medicine | Faculty |
| 2007-2021 | Department of Bioengineering University of Pittsburgh | Director of Undergraduate Internships Program |
| 2007-2008 | Department of Bioengineering University of Pittsburgh | Research Assistant Professor |
| 2005-2008 | Mechanobiology Laboratory Musculoskeletal Research Center Department of Bioengineering University of Pittsburgh | Co-Director (w/ Savio L-Y. Woo, Ph.D.) |
| 2005-2007 | Department of Bioengineering University of Pittsburgh | Postdoctoral Fellow |
| 2001-2005 | Musculoskeletal Laboratory Department of Bioengineering Rice University | Graduate Assistant |

D. Honors and Awards

1. *Personal Honors*

| <i>Title of Award</i> | <i>Year</i> |
|--|-------------|
| Mary Frances Dunnam Morse Graduate Fellowship in Biosciences (Rice University) | 2005 |

| | |
|--|-----------|
| 1 st Place Student Poster Competition (Rice University) | 2005 |
| Biomedical Engineering Society Travel Award (Rice University) | 2004 |
| Summa Cum Laude (Florida State University) | 2001 |
| 2 nd Place Student Podium Competition AICHE Southern Regional Conference (Florida State University) | 2000 |
| National Starch and Chemical Scholarship (Florida State University) | 2000 |
| Dean's List (6 semesters) (Florida State University) | 1998-2001 |
| Golden Key National Honor Society (Central Missouri State University) | 1998 |

2. Honors of Fellows-Students

Mentor of Sara Trbojevic, recipient of the NIH F31 Fellowship, 2022-2025.

Mentor of Adam Chin, recipient of the Biomechanics in Regenerative Medicine Fellowship, 2017-2018.

Mentor of Jesse Lowe, recipient of the NIH F31 Fellowship, 2016-2017.

Mentor of Jesse Lowe, recipient of the Biomechanics in Regenerative Medicine Fellowship, 2013-2015.

Mentor of Sarah Henderson, recipient of the Biomechanics in Regenerative Medicine Fellowship, 2008-2010.

Mentor of Serena Augustine, recipient of a NSF Fellowship (co-advised with Dr. Savio L-Y. Woo), 2006-2009.

II. RESEARCH

A. Bibliography

2. *Refereed Journal Articles*

1. Li W, Trbojevic S, Pineda-Farias JB, Liu X, Gold MS, **Almarza AJ**. “Mandibular condylar process remodeling in rats with different bite-altering devices.” *Eur Cell Mater*. 2023 Feb 14;45:46-59. doi: 10.22203/eCM.v045a04. PubMed PMID: 36785971.
2. Chung WL, Brown BN, **Almarza AJ**. “Decellularized small intestine submucosa device for temporomandibular joint meniscus repair: Acute timepoint safety study.” *PLoS One*. 2022;17(8):e0273336. doi: 10.1371/journal.pone.0273336. eCollection 2022. PubMed PMID: 36006938; PubMed Central PMCID: PMC9409591.
3. Lee JD, Becker JI, Larkin LM, **Almarza AJ**, Kapila SD. “Morphologic and histologic characterization of sheep and porcine TMJ as large animal models for tissue engineering applications.” *Clin Oral Investig*. 2022 Apr 1. doi: 10.1007/s00784-022-04472-3. Online ahead of print. PMID: 35359187
4. Brown BN, Chung WL, Lowe J, LoPresti ST, Cheetham J, **Almarza AJ**, Badylak SF. “Inductive Remodeling of Extracellular Matrix Scaffolds in the Temporomandibular Joint of Pigs.” *Tissue Eng Part A*. 2022 May;28(9-10):447-457. doi: 10.1089/ten.TEA.2021.0123. Epub 2022 May 2. PMID: 34809494
5. Li W, Trbojevic S, **Almarza AJ**. “Comparison of the Trueness of Fits of the Biphase Transverse Isotropic and Kelvin Models to the Tensile Behavior of Temporomandibular Joint Disc.” *J Biomech Eng*. 2021 Feb 4;143(6):064501. doi: 10.1115/1.4050033. Online ahead of print. PMID: 33537697
6. Patel A, Zaky SH, Li H, Schoedel K, **Almarza AJ**, Sfeir , Sant V, Sant S. “Bottom-Up Self-assembled Hydrogel-Mineral Composites Regenerate Rabbit Ulna Defect without Added Growth Factors.” *ACS Applied Bio Materials*, 2020, 3(9), pp. 5652–5663. PMID: 35021797
7. Chin AR, Taboas JM, **Almarza AJ**. “Regenerative Potential of Mandibular Condyle Cartilage and Bone Cells Compared to Costal Cartilage Cells When Seeded in Novel Gelatin Based Hydrogels.” *Ann Biomed Eng*. 2020 Nov 5;. doi: 10.1007/s10439-020-02674-y. [Epub ahead of print] PubMed PMID: 33155145.
8. Chin A, **Almarza A**. “Regional Dependence in Biphase Transversely Isotropic Parameters in the Porcine Temporomandibular Joint Disc and Mandibular Condylar Cartilage.” *Journal of biomechanical engineering*. 2020. Epub 2020/04/16. doi: 10.1115/1.4046922. PubMed PMID: 32291443.
9. Chen J, Chin A, **Almarza AJ**, Taboas JM. “Hydrogel to guide chondrogenesis versus osteogenesis of mesenchymal stem cells for fabrication of cartilaginous tissues.” *Biomed Mater*. 2020;15(4):045006. Epub 2019/08/31. doi: 10.1088/1748-605X/ab401f. PubMed PMID: 31470441.
10. Menale C, Robinson LJ, Palagano E, Rigoni R, Erreni M, **Almarza AJ**, Strina D, Mantero S, Lizier M, Forlino A, Besio R, Monari M, Vezzoni P, Cassani B, Blair HC, Villa A, Sobacchi C. “Absence of Dipeptidyl Peptidase 3 Increases Oxidative Stress and Causes Bone Loss.” *J Bone Miner Res*. 2019;34(11):2133-48. Epub 2019/07/12. doi: 10.1002/jbmr.3829. PubMed PMID: 31295380; PMCID: PMC7203631.

11. **Almarza A**, Mercuri L, Arzi B, Gallo LM, Granquist E, Kapila S, Detamore M. “State of TMJ Bioengineering: Working Together Toward Improving Clinical Outcomes.” *J Biomech Eng*. 2019 Jun 24. doi: 10.1115/1.4044090. Online ahead of print. PMID: 31233104.
12. Bezamat M, Deeley K, Khaliq S, Letra A, Scariot R, Silva RM, Weber ML, Bussaneli DG, Trevilatto PC, **Almarza AJ**, Ouyang H, Vieira AR “Are mTOR and Endoplasmic Reticulum Stress Pathway Genes Associated with Oral and Bone Diseases?”. *Caries Res*. 2019;53(3):235-241. doi: 10.1159/000492675. Epub 2018 Sep 11. PMID: 30205378
13. Ivanina AV, Borah BM, Vogts A, Malik I, Wu J, Chin AR, **Almarza AJ**, Kumta P, Piontkivska H, Beniash E, Sokolova IM. “Potential trade-offs between biomineralization and immunity revealed by shell properties and gene expression profiles of two closely related *Crassostrea* species.” *J Exp Biol*. 2018 Sep 20;221(Pt 18). pii: jeb183236. doi: 10.1242/jeb.183236. PMID: 29997158.
14. Lowe J, Bansal R, Badylak S, Brown B, Chung W, **Almarza A**. Properties of the Temporomandibular Joint in Growing Pigs. *Journal of biomechanical engineering*. 2018. Epub 2018/03/22. doi: 10.1115/1.4039624. PubMed PMID: 29560497; PMCID: PMC5938068.
15. Chin AR, Gao J, Wang Y, Taboas JM, **Almarza AJ**. Regenerative Potential of Various Soft Polymeric Scaffolds in the Temporomandibular Joint Condyle. *J Oral Maxillofac Surg*. 2018. Epub 2018/03/20. doi: 10.1016/j.joms.2018.02.012. PubMed PMID: 29550379.
16. **Almarza AJ**, Brown BN, Arzi B, Angelo DF, Chung W, Badylak SF, Detamore M. Preclinical Animal Models for Temporomandibular Joint Tissue Engineering. *Tissue Eng Part B Rev*. 2018. Epub 2017/11/11. doi: 10.1089/ten.TEB.2017.0341. PubMed PMID: 29121815.
17. **Almarza AJ**. Mechanical Perturbation Model of Tmj Disorders and Assessment of Musculature. *Pain*. 2018. Epub 2018/03/27. doi: 10.1097/j.pain.0000000000001228. PubMed PMID: 29578945.
18. Lowe J, **Almarza AJ**. “A review of in-vitro fibrocartilage tissue engineered therapies with a focus on the temporomandibular joint.” *Archives of Oral Biology*. 2017 Jul 23;83:193-201. doi: 10.1016/j.archoralbio.2017.07.013. [Epub ahead of print] Review. PMID: 28787640
19. MacIsaac ZM, Henderson SE, Shakir S, Naran S, Smith DM, Camison L, Cray JJ, **Almarza AJ**, Cooper GM, Losee JE. “Biomechanical Integrity in Craniofacial Surgery: Calvarial Reconstruction in Favorable and Infected Defects with Bone Morphogenetic Protein 2.” *Plast Reconstr Surg*. 2017 May;139(5):1141-1150. doi: 10.1097/PRS.0000000000003261. PMID: 28445366
20. Zaky SH, Lee KW, Gao J, Jensen A, Verdelis K, Wang Y, **Almarza AJ**, Sfeir C. “Poly (glycerol sebacate) elastomer supports bone regeneration by its mechanical properties being closer to osteoid tissue rather than to mature bone.” *Acta Biomaterialia*. 2017 May;54:95-106. doi: 10.1016/j.actbio.2017.01.053. Epub 2017 Jan 19. PMID: 28110067.
21. Salash JR, Hossameldin RH, **Almarza AJ**, Chou JC, McCain JP, Mercuri LG, Wolford LM, Detamore MS. “Potential Indications for Tissue Engineering in Temporomandibular Joint Surgery”. *Journal of Oral and Maxillofacial Surgery*. 2016;74(4):705-11. doi: 10.1016/j.joms.2015.11.008. PMID: 26687154.

22. Henderson SE, Tudares MA, Gold MS, **Almarza AJ**. “Analysis of pain in the rabbit temporomandibular joint after unilateral splint placement”. *Journal of Oral Facial Pain Headache*. 2015;29(2):193-202. doi: 10.11607/ofph.1371. PMID: 25905538.
23. Henderson SE, Tudares MA, Tashman S, **Almarza AJ**. “Decreased Temporomandibular Joint Range of Motion in a Model of Early Osteoarthritis in the Rabbit,” *Journal of Oral and Maxillofacial Surgery*. 2015 2015;73(9):1695-705. doi: 10.1016/j.joms.2015.03.042 PMID: 25889371; PMCID: PMC4540658.
24. Henderson SE, Lowe JR, Tudares MA, Gold MS, **Almarza AJ**. “Temporomandibular Joint Fibrocartilage Degeneration from Unilateral Dental Splints,” *Archives of Oral Biology*. 2015 Jan; 60(1):1-11. doi: 10.1016/j.archoralbio.2014.08.022. PMID: 25247778; PMCID: PMC4252753.
25. Henderson SE, Desai R, Tashman S, **Almarza AJ**. “Functional Analysis of the Rabbit Temporomandibular Joint Using Dynamic Biplane Imaging,” *Journal of Biomechanics*, 47(6):1360-7, 2014. 47(6):1360-7. doi: 10.1016/j.jbiomech.2014.01.051. PMID: 24594064; PMCID: 4010254.
26. Zaky SH, Hangadora CK, Tudares MA, Gao J, Jensen A, Wang Y, Sfeir C, **Almarza AJ**. “Poly (glycerol sebacate) Elastomer Supports Osteogenic Phenotype for Bone Engineering Applications,” *Biomedical Materials*. 2014; 9(2):025003. doi: 10.1088/1748-6041/9/2/025003. PMID: 24487088.
27. Henderson SE, Verdellis K, Maiti S, Pal S, Chung WL, Chou DT, Kumta PN, **Almarza AJ**. “Magnesium Alloys as a Biomaterial for Degradable Craniofacial Screws,” *Acta Biomaterialia*. 2014;10(5):2323-32. doi: 10.1016/j.actbio.2013.12.040. PMID: 24384125; PMCID: 3976705.
28. Zaky SH, Lee KW, Gao J, Jensen A, Close J, Wang Y, **Almarza AJ**, Sfeir C. “Poly(glycerol sebacate) Elastomer, a Novel Material for Mechanically Loaded Bone Regeneration,” *Tissue Engineering, Part A*. 2014;20(1-2):45-53. doi: 10.1089/ten.TEA.2013.0172. PMID: 24020497.
29. Cray JJ, Henderson SE, Smith DM, Kinsella CR, Bykowski M, Cooper GM, **Almarza AJ**, Losee JE. “BMP-2-Regenerated Calvarial Bone: A Biomechanical Appraisal in a Large Animal Model,” *Annals of Plastic Surgery*. 2014;73(5):591-7. doi: 10.1097/SAP.0b013e31827f4c82. PMID: 23657046.
30. Hagandora CK, Gao J, Wang Y, **Almarza AJ**. “Poly (Glycerol Sebacate): A Novel Scaffold Material for Temporomandibular Joint Disc Engineering,” *Tissue Engineering, Part A*. 19(5-6):729-37, 2013.
31. Liu L, Alonso V, Guo L, Tourkova I, Henderson SE, **Almarza AJ**, Friedman PA, Blair HC. “Na⁺/H⁺-Exchange Regulatory Factor-1 (NHERF1) Directly Regulates Osteogenesis,” *Journal of Biological Chemistry*. 287(52):43312-21, 2012.
32. Hagandora CK, **Almarza AJ**. “TMJ Disc Removal: Comparison between Pre-clinical Studies and Clinical Findings,” *Journal of Dental Research*. 91(8):745-52, 2012.
33. Brown BN, Chung WL, **Almarza AJ**, Pavlick MD, Reppas SN, Ochs MW, Russell AJ, Badylak SF. “Inductive, Scaffold-Based, Regenerative Medicine Approach to Reconstruction of the Temporomandibular Joint Disk,” *Journal Oral Maxillofacial Surgery*. 70(11):2656-68, 2012.

34. Fisher MB, Liang R, Jung HJ, Kim KE, Zamorra G, **Almarza AJ**, McMahon PJ, Woo SL. "Potential of Healing a Transected Anterior Cruciate Ligament with Genetically Modified Extracellular Matrix Bioscaffolds in a Goat Model," *Knee Surgery, Sports Traumatology, Arthroscopy*, 20(7):1357-65, 2012.
35. Hagandora CK, **Almarza AJ**. "The Effect of Magnesium Ion Concentration on the Fibrocartilage Regeneration Potential of Goat Costal Chondrocytes," *Annals of Biomedical Engineering*, 40(3):688-96, 2012.
36. **Almarza AJ**, Hensderson SE, Hangandora CK. "Animal Models of Temporomandibular Joint Disorders: Implications for Tissue Engineering Approaches," *Annals of Biomedical Engineering*, 39 (10): 2479-2490, 2011.
37. Hagandora CK, Chase TW, **Almarza AJ**. "A Comparison of the Mechanical Properties of the Goat Temporomandibular Joint Disc to the Mandibular Condylar Cartilage in Unconfined Compression," *Journal of Dental Biomechanics*, DOI 212385, 2011.
38. Nguyen TD, Liang R, Woo SL-Y, Burton SD, Wu C, **Almarza AJ**, Sacks MS, Abramowitch SD. "Effects of Cell Seeding and Cyclic Stretch on the Fiber Remodeling in an Extracellular Matrix-Derived Bioscaffold," *Tissue Engineering Part A*, 15(4): 957-63, 2009.
39. **Almarza AJ**, Augustine S, Woo SL-Y. "Changes in Gene Expression of Matrix Constituents with Respect to Passage of Ligament and Tendon Fibroblasts," *Annals of Biomedical Engineering*, 36(12): 1927-33, 2008.
40. **Almarza AJ**, Yang G, Woo SL-Y, Nguyen TD, Abramowitch SD. "Positive Changes of Bone Marrow Derived Cells in Response to Culture on an Aligned Bioscaffold," *Tissue Engineering Part A*, 14(9): 1489-95, 2008.
41. Liang R, Woo SL-Y, Nyugen TD, Liu PC, **Almarza AJ**. "Effects of a Bioscaffold on Collagen Fibrillogenesis in Healing Medial Collateral Ligament in Rabbits," *Journal of Orthopaedic Research*, 26(8): 1098-104, 2008.
42. Bean, AC, **Almarza, AJ**, and Athanasiou, KA. "Effects of Ascorbic Acid Concentration for the Tissue Engineering of the Temporomandibular Joint Disc," *Proceedings of the Institution of Mechanical Engineers, Part H*, 220(3): 439-447, 2006.
43. **Almarza AJ**, Athanasiou KA, "Effects of Hydrostatic Pressure on TMJ Disc Cells," *Tissue Engineering*, 12(5): 1285-94, 2006.
44. Detamore MS, Hegde JN, Wagle RR, **Almarza AJ**, Montufar-Solis D, Duke PJ, Athanasiou KA, "Cell Type and Distribution in the Porcine Temporomandibular Joint Disc," *Journal of Oral and Maxillofacial Surgery*, 64(2): 243-248, 2006.
45. **Almarza AJ**, Athanasiou KA, "Evaluation of Three Growth Factors in Combinations of Two for TMJ disc Tissue Engineering," *Archives of Oral Biology*, 51(3): 215-221, 2006.
46. **Almarza AJ**, Bean AC, Baggett LS, Athanasiou KA, "Biochemical Analysis of the Porcine Temporomandibular Joint Disc," *British Journal of Oral and Maxillofacial Surgery*, 44(2): 124-128, 2006.

47. **Almarza AJ**, Athanasiou KA, “Effects of Initial Cell Seeding Density for the Tissue Engineering of the Temporomandibular Joint Disc,” *Annals of Biomedical Engineering*, 33(7): 943-50, 2005.
48. Detamore MS, Orfanos JG, **Almarza AJ**, French MM, Wong ME, Athanasiou KA, “Quantitative Analysis and Comparative Regional Investigation of the Extracellular Matrix of the Porcine Temporomandibular Joint Disc,” *Matrix Biology*, 24(1): 45-57, 2005.
49. **Almarza AJ**, Athanasiou KA, “Seeding Techniques and Scaffolding Choice for the Tissue Engineering of the Temporomandibular Joint Disc,” *Tissue Engineering*, 10(11-12): 1787-95, 2004.
50. **Almarza AJ**, Athanasiou KA, “Design Characteristics for the Tissue Engineering of Cartilaginous Tissues,” *Annals of Biomedical Engineering*, 32(1): 2-17, 2004.

3. *Books and Book Chapters*

Books

1. Athanasiou KA, **Almarza AJ**, Detamore MS, Kalpacki KN, *Tissue Engineering of Temporomandibular Joint Cartilage*, Morgan and Claypool Publishers, 2009, ISBN 1598299964.

Book Chapters

1. Woo SL-Y, **Almarza AJ**, Liang R, Fisher MB. Functional Tissues Engineering of Ligament and Tendon Injuries, in Translational Approaches in Tissue Engineering and Regenerative Medicine. Ed. Mao J, Vunjak-Novakovic G, Mikos AG, Atala A. Artech House, Inc. 2008.
2. Woo SL-Y, **Almarza AJ**, Karaoglu S, Abramowitch SD. “Functional Tissues Engineering of Ligament and Tendon Injuries,” in Principles of Regenerative Medicine. Ed. Atala A , Lanza R, Thomson JA, Nerem RM. Elsevier, Inc. 2008.
3. Allen KD, Detamore MS, **Almarza AJ**, Wong ME, Athanasiou KA, “The temporomandibular joint disc,” in *Wiley Encyclopedia of Biomedical Engineering*, Metin Akay (ed.), John Wiley & Sons. 2006.

4. *Ph.D. Dissertation*

Almarza AJ.; Academic Advisor: Kyriacos Athanasiou PhD; Committee Members: Michael Liebchner, Ph.D., Mark Wong, M.D., Kyriacos Zygourakis, Ph.D., Margaret French, Ph.D.: Extracellular matrix characterization and tissue engineering of the temporomandibular joint disc. Defended on April 15th, 2005. Rice University, School of Engineering, Department of Bioengineering.

5. *Conference Proceedings*

1. Leeper BJ, Henderson SE, **Almarza AJ**, Judd MA, Siegel MI. “Determining the effects of defleshing methods on the structural integrity of bone through mechanical testing,” *American Journal of Physiological Anthropology*. Vol. 150, pp. 179-179, 2013, January.

- Abramowitch S, Redfern M, Debski R, **Almarza AJ**, Borovetz, H, Woo, SL-Y. "Intramural Research Internship: A Requirement of the Undergraduate Bioengineering Curriculum at the University of Pittsburgh," (Short Paper, Peer Reviewed). *Global Colloquium on Engineering Education (ASEE)*, 2008.

6. *Published Abstracts*

- Chin A, Chen J, Swenson T, Taboas J, **Almarza AJ**. "In Vitro Differentiation of BMSCs in PGH and Gelatin Hydrogels." Biomedical Engineering Society Annual Meeting. Atlanta, GA. (September 2019)
- Liu X, Gold MS, **Almarza AJ**. "Malocclusion on the Histology of the TMJ Cartilage of Rats." AADR/CADR Annual Meeting & Exhibition. Ft. Lauderdale, Florida. (March 2018)
- Li W, Pineda-Fairas JB, Gold MS, **Almarza AJ**. Orofacial Pain Assessment of Rats With Bite-Raising Splints. AADR/CADR Annual Meeting & Exhibition. Ft. Lauderdale, Florida. March 2018.
- Chin AR, Taboas J, Gao J, Wang, Y, **Almarza AJ**. "In Vivo Regenerative Potential of Various Soft Polymeric Scaffolds in Osteochondral TMJ Defects. International Symposium on Ligaments & Tendons XVI. San Diego, CA, (March 2017).
- Lowe J, **Almarza AJ**. "Temporal Native Properties in a Maturing Porcine Temporomandibular Joint Disc". International Association of Dental Researchers Annual Meeting. San Francisco, CA, (March 2017).
- Chin AR, Taboas J, Gao J, Wang Y, **Almarza AJ**. "In-Vivo Regenerative Potential of Various Polymeric Scaffolds in Osteochondral TMJ Defects. Temporomandibular Joint Bioengineering Conference. Barcelona, Spain. (September 2016).
- Lowe JR, Chung W, Brown B, Johnson S, Badylak S, **Almarza AJ**. "Properties of Remodeled ECM Scaffolds in the Temporomandibular Joint". Temporomandibular Joint Bioengineering Conference. Barcelona, Spain. (September 2016).
- Lowe JR, Chung W, Brown B, Johnson S, Badylak S, **Almarza AJ**. "Properties of Remodeled ECM Scaffolds in the Temporomandibular Joint". Biomedical Engineering Society Annual Meeting. Minneapolis, MN, (October 2016).
- Lowe J, Almarza A. "Effect of Age on the Mechanical Properties of the Temporomandibular Joint Disc". Summer Biomechanics, Bioengineering, and Biotransport Conference. Washington, DC, (June 2016).
- Chin AC, Taboas JM, Wang Y, **Almarza AJ**. "In-Vivo Regenerative Potential of Various Polymeric Scaffolds in Osteochondral TMJ Defects", American Association of Dental Researchers Annual Meeting, Los Angeles, CA, (March 2016).
- Lowe JR, Chung W, Brown B, Johnson S, Badylak S, **Almarza AJ**. "Compressive Properties of Remodeled ECM Scaffolds in the Temporomandibular Joint", American Association of Dental Researchers Annual Meeting, Los Angeles, CA, (March 2016).

12. Lowe JR, Chung W, Brown B, Johnson S, Badylak S, **Almarza AJ**. “In-vivo Tensile Properties of Remodeled Extracellular Matrix Scaffolds in the Temporomandibular Joint of a Porcine Model”, Orthopedic Research Society Annual Meeting, Orlando, FL, (March 2016).
13. Lowe JR, Chung W, Brown B, Johnson S, Badylak S, **Almarza AJ**. “In-vivo Tensile Properties of Remodeled ECM Scaffolds in the Temporomandibular Joint”, Biomedical Engineering Society Annual Meeting, Tampa Bay, FL, (October 2015).
14. Lowe JR, **Almarza AJ**. “Inter and Intra Variation in the Tensile Properties of the Porcine Temporomandibular Joint Disc”, Summer Biomechanics, Bioengineering, and Biotransport Conference, Salt Lake City, UT. (July 2015).
15. Henderson SE, Tudares MA, Tashman S, Lowe J, **Almarza AJ**. “Kinematic Analysis of the Rabbit Temporomandibular Joint after Altered Occlusion”. International Association of Dental Researchers Annual Meeting, Boston, MA. (March 2015).
16. Lowe JR, **Almarza AJ**. “Variation in Tensile Properties of Anterior-Posterior Samples of the Porcine Temporomandibular Joint Disc in the Superior-Inferior Direction,” McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. (March 2015).
17. Chin AC, **Almarza AJ**. “Temporal Changes in Compressive Properties of PGS Scaffolds Seeded with Fibrochondrocytes,” McGowan Institute for Regenerative Medicine Annual Retreat, Farmington, PA. (March 2015).
18. Mortimer RJ, Lowe JR, **Almarza AJ**. “Determination of the Mechanical Properties of the Porcine Temporomandibular Joint Disc in Unconfined Compression at Slow Strain Rate,” Biomedical Engineering Society Annual Meeting, San Antonio, TX. (October 2014).
19. Mortimer RJ, Lowe JR, **Almarza AJ**. “Determination of the mechanical properties of the porcine temporomandibular joint disc in unconfined compression,” World Congress of Biomechanics, Boston, MA. (July 2014).
20. **Almarza AJ**, Henderson S, Tudares M, Lowe J, Gold M. “Altered Loading, Degeneration, and Pain in a Rabbit Model,” TMJ Bioengineering Conference, Pittsburgh, PA. (June 2014).
21. Henderson SE, Tudares MA, Gold MS, **Almarza AJ**. “Presence of Pain after Induction of Altered Loading in Rabbit,” American Association for Dental Research Annual Meeting, Charlotte, NC (March 2014).
22. **Almarza AJ**, Henderson SE, Tudares, Gold MS. “Pain Assessment of the Rabbit Temporomandibular Joint after Unilateral Dental Splint Placement,” 59th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA (March 2014).
23. Hagandora CK, Gao J, Wang Y, and **Almarza AJ**. “Spinner Flask Culture and Mechanical Stimulation Enhance Fibrocartilage Regeneration for the Temporomandibular Joint,” 59th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA (March 2014).

24. Hagandora CK, Lowe JR, Johnson S, Badylak S, **Almarza AJ**. "In Vitro Loading Affects Fibrochondrogenic Gene Expression of Bone Marrow Stem Cells on Extracellular Matrix Scaffolds," McGowan Institute of Regenerative Medicine Retreat, Farmington, PA (March 2014).
25. Mortimer RJ, Lowe JR, **Almarza AJ**. "Determination of the Mechanical Properties of the Porcine Temporomandibular Joint Disc in Unconfined Compression," McGowan Institute of Regenerative Medicine Retreat, Farmington, PA (March 2014).
26. Gorski J, Hagandora CK, **Almarza AJ**, Marra K, Gao J, Wang Y. " Adipose-Derived Stem Cell Potential for Tissue Engineering the Temporomandibular Joint Disc," Annual Meeting of the Biomedical Engineering Society, Seattle, WA (September 2013).
27. MacIsaac ZM, Henderson SE, Nayar H, Shakir S, Naran S, Smith DM, Cray JJ, Mooney MP, Cooper GM, **Almarza AJ**, Losee JE. "Long-Term Biomechanical Properties of Bone Morphogenetic Protein Regenerated Bone in Favorable and Unfavorable Calvarial Wounds," ISCFS XV Biennial International Congress. Jackson Hole, WY (September 2013).
28. MacIsaac ZM, Henderson SE, Nayar HS, Shakir S, Smith DM, Cray JJ, Mooney MP, Cooper GM, **Almarza AJ**, Losee JE. "Biomechanical Integrity in Craniofacial Surgery: Calvarial Reconstruction in Favorable and Infected Defects with Bone Morphogenetic Protein 2" 58th Annual Meeting of the Plastic Surgery Research Council. Santa Monica, CA (May 2013).
29. MacIsaac ZM, Henderson SE, Nayar HS, Shakir S, Smith DM, Cray JJ, Mooney MP, Cooper GM, **Almarza AJ**, Losee JE. "Biomechanical Integrity in Craniofacial Surgery: Calvarial Reconstruction in Favorable and Infected Defects with Bone Morphogenetic Protein 2" 12th International Congress on Cleft Lip/Palate and Related Craniofacial Anomalies. Orlando, FL (May 2013).
30. MacIsaac ZM, Henderson SE, Nayar H, Shakir S, Naran S, Smith DM, Cray JJ, Mooney MP, Cooper GM, **Almarza AJ**, Losee JE. "Long-term Biomechanical Properties of Bone Morphogenetic Protein Regenerated Bone in Favorable and Unfavorable Calvarial Wounds" American Association of Plastic Surgeons Annual Meeting. New Orleans, LA (April 2013).
31. Leeper BK, Henderson SE, **Almarza AJ**, Siegel MI, Judd MA. "Determining the Effects of Defleshing Methods on the Structural Integrity of Bone Through Mechanical Testing" American Association of Physical Anthropology Annual Meeting. Knoxville, TN (April 2013).
32. Hagandora CK, Lowe J, Gao J, Wang Y, and **Almarza AJ**. "The Effect of Mechanical Stimulation on TMJ Disc Regeneration," American Association for Dental Research Annual Meeting. Seattle, WA (March 2013).
33. Henderson SE, Tudares MT, **Almarza AJ**. "Induced TMJ Degeneration using Unilateral Dental Splints in a Rabbit," American Association for Dental Research Annual Meeting. Seattle, WA (March 2013).
34. Henderson SE, Tudares MT, **Almarza AJ**. "Unilateral Splints Induced Temporomandibular Joint Degeneration in a Rabbit Model," McGowan Institute of Regenerative Medicine Annual Retreat. Farmington, PA (March 2013).
35. Henderson SE, Desai R, Tashman S, **Almarza AJ**. "Kinematic Analysis of the Rabbit Temporomandibular Joint" 58th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX (January 2013).

36. Henderson SE, Chung WL, Chou D, Kumta PN, **Almarza AJ**. "Analysis of Magnesium Screws in the Craniofacial Region of a Rabbit," Annual Meeting of the Biomedical Engineering Society, Atlanta, GA (October 2012).
37. Hagandora CK, Gao J, Wang Y, **Almarza AJ**. "Poly (glycerol sebacate): a novel scaffold material for temporomandibular joint disc engineering," Annual Meeting of the Biomedical Engineering Society, Atlanta, GA (October 2012).
38. MacIsaac ZM, Henderson SE, Nayar H, Smith D, Cray J, Mooney MM, Cooper GM, **Almarza AJ**, Losee JE. "Biomechanical Integrity in Craniofacial Surgery: Calvarial Reconstruction in Favorable and Infected Defects with Bone Morphogenetic Protein 2," 55th Annual Meeting of the Ohio Valley Society of Plastic Surgeons. Cleveland, Ohio (May 2012).
39. **Almarza AJ**, Brown B, Chung WL, Hagandora CK, Henderson SE. "Characterization of Xenogenic Biologic Scaffold for the Temporomandibular Joint Disc," American Association for Dental Research Annual Meeting. Tampa, FL (March 2012).
40. Chao PT, Hagandora CK, Pena A, Taboas JM, **Almarza AJ**. "Poly(ethylene-glycol) Scaffold System for Temporomandibular Joint Tissue Engineering with Fibrochondrocytes," American Association for Dental Research Annual Meeting. Tampa, FL (March 2012).
41. Henderson SE, **Almarza AJ**, Chung WL, Chou D, Kumta PN. "Analysis of Magnesium Screw Degradation in a Rabbit Using Micro-CT," American Association for Dental Research Annual Meeting. Tampa, FL (March 2012).
42. **Almarza AJ**. "Imaging for Diagnosis of TMDs and Tissue Engineering of Fibrocartilage and Bone," Annual Meeting of the American Society of Temporomandibular Joint Surgery, Naples, FL (March 2012).
43. Hagandora CK, Gao J, Wang Y, **Almarza AJ**. "Poly (glycerol sebacate): a novel scaffold material for temporomandibular joint disc engineering," McGowan Institute of Regenerative Medicine Annual Retreat. Farmington, PA (March 2012).
44. Henderson SE, Chung WL, Chou D, Kumta PN, **Almarza AJ**. "Micro-CT Analysis of Magnesium Screw Degradation in a Rabbit Model," McGowan Institute of Regenerative Medicine Annual Retreat. Farmington, PA (March 2012).
45. Hagandora CK, **Almarza AJ**. "Magnesium Alloys for the Temporomandibular Joint: What are acceptable ion levels?" 57th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA (February 2012).
46. Henderson SE, **Almarza AJ**, Tashman S, McCarty AL. "Effect of Mechanically Induced Malocclusion on Rabbit Temporomandibular Joint Kinematics," Annual Meeting of the Biomedical Engineering Society, Hartford, CT (October 2011).
47. Henderson SE, **Almarza AJ**, Chung WL, Kumta PN. "Micro-CT Assessment of Magnesium Screws In-Vivo in the Rabbit Mandible," Annual Meeting of the Biomedical Engineering Society, Hartford, CT (October 2011).

48. **Almarza AJ**, Maropis M, Kamelin, Hagandora CK. "The Effect of BMP-2 Peptide Concentration on the Short Term Osteogenic Protein Production of MC3T3 Cells," Annual Meeting of the Biomedical Engineering Society, Hartford, CT (October 2011).
49. Hagandora CK, Tudares MA, **Almarza AJ**. "The Effect of Magnesium Ion Concentration on the Fibrocartilage Regeneration Potential of Goat Costal Chondrocytes," Annual Meeting of the Biomedical Engineering Society, Hartford, CT (October 2011).
50. Smith DM, Cray J, Henderson SE, Cooper GM, **Almarza AJ**, Losee JE. "A Biomechanical Appraisal of Bone Morphogenetic Protein-2-Derived Bone in a Large Animal Model of Calvarial Reconstruction" ISCFS XIV Biennial International Congress. Livingstone, Zambia (August 2011).
51. Hagandora CK, **Almarza AJ**. "A Comparison of the Mechanical Properties of the Goat Temporomandibular Joint Disc to the Mandibular Condylar Cartilage in Unconfined Compression," Proceedings of the ASME 2011 Summer Bioengineering Conference, Nemaconlin Resort, PA (June 2011).
52. Henderson SE, **Almarza AJ**, Tashman S, McCarty AL. "Temporomandibular Joint Kinematics of the Rabbit Model with Mechanically Disrupted Occlusion," Proceedings of the ASME 2011 Summer Bioengineering Conference, Nemaconlin Resort, PA (June 2011).
53. Maropis MM, **Almarza AJ**, Kamelin PE, Kunkle C. "BMP-2 Peptide and the Osteogenic Protein Production of MC3T3 Cells," International Association for Dental Research, San Diego, CA (March 2011).
54. **Almarza AJ**, Brown B, Chung W, Hagandora CK, Henderson SE, Badylak S. "Xenogenic Biologic Scaffold as a Temporomandibular Joint Disc in a Canine Model," Annual Meeting of the Biomedical Engineering Society, Austin, TX (October 2010).
55. **Almarza AJ**, Henderson SE. "Biomechanical Analysis of the Rabbit Temporomandibular Joint," 16th US National Congress of Theoretical and Applied Mechanics, State College, PA (June, 2010).
56. **Almarza AJ**, Chase T. "Modeling the Stress-Relaxation Behavior Under Unconfined Compression of Mandibular Condylar Cartilage," 56th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA (March, 2010).
57. **Almarza AJ**. "Understanding TMJ Degeneration and Regeneration," Annual Meeting of the American Society of Temporomandibular Joint Surgery, Palm Springs, CA (March 2010).
58. **Almarza AJ**. "Design Criteria in TMJ (in Metallic Biomaterials session)," McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2010).
59. **Almarza AJ**, Wang Y, Gao J, Kunkle C. "PGS Scaffold Manufacturing and Characterization of Compressive Properties," McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2010).
60. Henderson SE, **Almarza AJ**. "Biomechanical Analysis of the Rabbit Temporomandibular Joint," McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2010).

61. **Almarza AJ**, Beniash E, Lam R, Kunkle C. “Alginate Hydrogels with Amorphous Calcium Phosphate for Bone Regeneration,” Temporomandibular Joint Conference, Boulder, CO (November 2009).
62. **Almarza AJ**, Chase T, Henderson SE. “Application of the Transversely Isotropic Biphasic Model to the Unconfined Compression of Mandibular Condylar Cartilage,” Temporomandibular Joint Conference, Boulder, CO (November 2009).
63. Henderson SE, Abramowitch SD, **Almarza AJ**, “Experimental and Theoretical Evaluation of Viscoelastic Shear Properties of Mandibular Cartilage” Annual Meeting of the Biomedical Engineering Society, Pittsburgh, PA (October 2009).
64. **Almarza AJ**, Henderson SE. “Perspectives on TMJ Fibrocartilage Tissue Engineering,” Midwest Tissue Engineering Consortium, Pittsburgh, PA (April 2009).
65. Henderson SE, **Almarza AJ**. “Assessment of Mandibular Condylar Cartilage Shear Properties and Tissue Engineering using 3D Printing,” McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2009).
66. Fisher MB, Zamorra G, Cirillo A, Liang R, **Almarza AJ**, McMahon PJ, Woo SL-Y. “Improved Healing of the Anterior Cruciate Ligament Following Genetically-Engineered Bioscaffold Treatment in the Goat Model,” 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV (February, 2009).
67. Woo SL-Y, Fisher FB, **Almarza AJ**. “Regeneration of Ligaments and Tendons by Application of Bioscaffolds,” Proceedings of the ASME International Mechanical Engineering Congress & Exposition, Boston (October 2008).
68. **Almarza AJ**, Woo SL-Y. “Functional tissue engineering of ligaments and tendons,” McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2008).
69. Liang R, **Almarza AJ**, Nyugen TD, Woo SL-Y. “A tissue engineering approach to enhance the healing of ligaments,” McGowan Institute of Regenerative Medicine Annual Retreat, Nemaconlin, PA (March 2008).
70. **Almarza AJ**, Augustine S, Woo SL-Y, “Effects of Ascorbic Acid Presence on the Gene Expression of Collagens of Medial Collateral Ligament Fibroblasts through Passages,” 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA (March, 2008).
71. Woo SL-Y, **Almarza AJ**, Fisher MB, Liang R, “Biologic Effects of ECM Bioscaffolds for Ligament and Tendon Healing and Regeneration,” 5th Symposium on the use of extracellular matrix as a biological scaffold for tissue reconstruction. Scottsdale, AZ (February 2008).
72. **Almarza AJ**, Augustine S, Woo SL-Y, “Changes in Gene Expression of Passaged Bone Marrow Derived Cells in Culture,” Mathematical Biosciences Institute Workshop on Cell and Tissue Engineering, Columbus, OH (October 2007).
73. Liang R, Nyugen TD, **Almarza AJ**, Woo SL-Y, “The Fibrillogenesis Related Gene Expression in a Bioscaffold-Treated Healing Ligament,” Mathematical Biosciences Institute Workshop on Cell and Tissue Engineering, Columbus, OH (October 2007).

74. **Almarza AJ**, Augustine S, Woo SL-Y, “Comparison of Ligament and Tendon Fibroblast Behavior through Passages for Tissue Engineering,” Annual Meeting of the Biomedical Engineering Society, Los Angeles, CA (September, 2007).
75. Augustine S, **Almarza AJ**, Woo SL-Y, “Effects of Passages on the Gene Expression Profile of Medial Collateral Ligament Fibroblasts,” Annual Meeting of the Biomedical Engineering Society, Los Angeles, CA (September, 2007).
76. Woo SL-Y, **Almarza AJ**, “Functional Tissue Engineering of Ligaments and Tendons,” 6th Biennial International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine Congress, Florence, Italy (May 2007).
77. Liang R, Nguyen TD, Fu C, **Almarza AJ**, Abramowitch SD, Sacks MS, Woo SL-Y, “A Bioscaffold to Enhance Neo-tissue Formation in the Patellar Tendon Donor Site and to Limit Adhesion Formation with the Fat Pad: a Morphological Study,” 6th Biennial International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine Congress, Florence, Italy (May 2007).
78. Woo SL-Y, **Almarza AJ**, Fisher MB, “New Biological Engineering Approach for Ligament and Tendon Healing and Regeneration,” The 4th International Symposium for Orthopaedic Sports Medicine – 2007 (4th ISOSM), Keelung, Keelung, Taiwan (May 2007).
79. **Almarza AJ**, Augustine S, Woo SL-Y, “Effects of Passage on Ligament Fibroblasts: Implications for Functional Tissue Engineering,” 7th Session of the International Symposium of Ligaments and Tendons, La Jolla, CA (February 2007).
80. Nguyen TD, Burton SD, Liang R, **Almarza AJ**, Abramowitch SD, Sacks MS, Woo SL-Y, “Functional Tissue Engineering a Bioscaffold to Enhance Ligament Healing: Improving Collagen Fiber Alignment with Cell-Seeding and Mechanical Stretching,” 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA (February, 2007).
81. Liang R, Nyugen TD, **Almarza AJ**, Woo SL-Y, “The Fibrillogenesis Related Gene Expression in a Bioscaffold-Treated Healing Ligament,” 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA (February, 2007).
82. Liu PC, Liang R, Karaoglu S, Fischer MB, **Almarza AJ**, Abramowitch SD, Woo SL-Y, The Effect of a Bioscaffold on the Patellar Tendon Harvest in ACL Reconstruction. 10th International Conference on Orthopaedics, Biomechanics, & Sports Rehabilitation, Assisi (Perugia), Italy, December 1-3, 2006.
83. **Almarza AJ**, Yang G, Nguyen, Abramowitch SD, Woo SL-Y, “Bone Marrow Derived Cells Express more Collagen when Seeded on Elongated Small Intestine Submucosa,” Annual Meeting of the Biomedical Engineering Society, Chicago, IL (October, 2006).
84. Yang G, **Almarza AJ**, Nguyen T, Shin D, Abramowitch SD, Woo SL-Y, “Cells Seeded on Porcine Small Intestine Submucosa Under Constant Elongation Align Along the Improved Collagen Fiber Orientation,” 6th Session of the International Symposium of Ligaments and Tendons, Chicago, IL (March 2006).

85. **Almarza AJ**, Bean AC, Baggett LS, Athanasiou KA, “Biochemical content and distribution in the porcine temporomandibular joint disc,” Annual Meeting of the Biomedical Engineering Society, Philadelphia, PA (October, 2004).
86. **Almarza AJ**, Athanasiou KA, “Seeding techniques and scaffolding choice for the tissue engineering of the temporomandibular joint disc,” Annual Meeting of the Biomedical Engineering Society, Philadelphia, PA (October, 2004).
87. Detamore MS, **Almarza AJ**, Allen KD, Athanasiou KA, “Current state of tissue engineering for the TMJ,” Annual Meeting of the American Society of Temporomandibular Joint Surgeons, Fort Myers, FL (March, 2004).
88. Detamore MS, Hegde JN, Wagle RR, **Almarza AJ**, Athanasiou KA, “Topographical distribution and sub-populations of cells in the porcine temporomandibular joint disc,” Annual Meeting of the Biomedical Engineering Society, Nashville, TN (October, 2003).

7. ***Patents Pending/Issued***

1. BIODEGRADABLE, MAGNESIUM-CONTAINING BONE SCREWS, METHODS FOR THEIR PREPARATION AND MEDICAL APPLICATIONS THEREFOR.
U.S. Patent Serial No. US 10,849,667 B2 (December 1, 2020), US 11,589,906 B2 (February 28, 2023)
Almarza AJ et al.
2. BONE REGENERATION IN COMPROMISED WOUNDS
Application No. 62/684,401, filed June 13, 2018
Taboas J, **Almarza AJ**, et al.
3. BIOCOMPATIBLE POLYMER AND MAGNESIUM FOR REGENERATION OF ARTICULAR SURFACES IN THE TEMPOROMANDIBULAR JOINT
PCT INTERNATIONAL APPLICATION NO. PCT/US2017/050882, FILED SEPT. 11, 2017
Almarza AJ et al.

8. ***Invited Lectures, Seminars, Scientific Sessions***

(in addition to presentations given at national conferences and shown in 4)

- 09/23 Invited Speaker
The TMJ Patient-Led RoundTable Meeting Series
TMJ Association and FDA
- 03/23 Invited Keynote Speaker
Tissue Engineering and Dental Regeneration - Novel Therapeutics and Approaches
AADOCR/CADR Annual Meeting & Exhibition
- 09/21 Invited seminar speaker
Institute of Biomaterials, Tribocorrosion, Nano and Regenerative Medicine

Virtual Webinar
University of Illinois Chicago and Rush University Medical Center

- 03/18 Invited Symposium Speaker
AADR/CADR Annual Meeting & Exhibition
- 04/17 Invited seminar speaker
Department of Biomedical Engineering
University of Akron
Akron, Ohio
- 11/16 Invited seminar speaker
School of Biomedical Engineering, Science and Health Systems
Drexel University
Philadelphia, Pennsylvania
- 04/16 Invited seminar speaker
McGowan Institute Wound Healing Conference
University of Pittsburgh
Pittsburgh, Pennsylvania
- 01/16 Invited seminar speaker
Department of Oral Health Sciences
Medical University of South Carolina
Charleston, South Carolina
- 10/15 Invited seminar speaker
Joint Biomedical Engineering Program
SUNY Downstate Medical Center
New York City, New York
- 01/13 Invited seminar speaker
McGowan Institute Wound Healing Conference
University of Pittsburgh
Pittsburgh, Pennsylvania
- 11/12 Invited seminar speaker
Dept. of Chemical Engineering
University of Kansas
Lawrence, Kansas
- 09/12 Invited speaker
Biomechanics Day 2012
University of Pittsburgh
Pittsburgh, Pennsylvania

- 03/12 Invited seminar speaker
Dept. of Oral and Maxillofacial Surgery
Allegheny General Hospital
Pittsburgh, Pennsylvania
- 09/10 Invited speaker
Biomechanics Day 2010
University of Pittsburgh
Pittsburgh, Pennsylvania
- 04/09 Invited seminar speaker
McGowan Institute Wound Healing Conference
University of Pittsburgh
Pittsburgh, Pennsylvania

B. Areas of Research Interest

Theoretical and experimental bioengineering: Tissue engineering, Craniofacial and Orthopaedic biomechanics and biomaterials, fibrocartilage healing, temporomandibular joint

Michigan-Pittsburgh-Wyss Resource Center **Total Cost: \$150,000** 01/01/2018 – 12/31/2021
ITP Project
Almarza (PI)
“ECM Scaffolds for TMJ Disc Repair”
This is a study to support the pre-clinical development (FDA Pre-IDE submission) ECM based devices. We will compare devices made in a GMP facility to the previous published results in the canine animal model.
Role: PI

R01 DE022055-01, NIH **Total Cost: \$2.5M** 07/01/2012-06/30/2016
Badylak and Almarza (Multi-PI) No Cost Extension through 06/30/2017
The goal of this study is to use extracellular matrix scaffold for regeneration of the TMJ disc in the porcine model.
Role: Multi-PI

NSF- 0812348, NSF-ERC 08/01/2010-07/30/2020
Sankar, Wagner, Borovetz (Multi-PI)
The goal of this NSF-ERC subproject is the develop degradable metals technology for TMJ applications
Role: Co-I of consortium and PI of subproject

W81XWH-15-DMRDP USAMRAA, DOD 09/01/2016 – 08/31/2021
Taboas and Almarza (Multi-PI) (no-cost extension)
“Bone Regeneration Device for Compromised Wounds”
The goal of this project is to use novel hydrogels to regenerate bone in large compromised wounds by osteochondral mineralization
Role: Multi-PI

R01 AR076357, NIH 09/01/2020-08/30/2024
Li (PI)
Targeting Nitrate-Nitrite-NO pathway for Ameliorating Muscle and Bone Comorbidities in Duchenne Muscular Dystrophy
The major goal of this project to test the efficacy of inorganic nitrite in ameliorating muscle and bone comorbidities in DMD and explore its mechanism of action on both skeletal muscle and bone.
Role: Co-I

Coulter Foundation 07/01/2013-06/30/2018
Brown, Chung, Almarza (Multi-PI)
An Inductive, Scaffold Based Device for Reconstruction of Joint Menisci: Temporomandibular Joint
The goal of this study is to use extracellular matrix scaffolds as a replacement for the TMJ disc in human patients. Specifically apply to the FDA to perform a first in human IDE trial.
Role: Multi-PI

Central Research Development Fund (Pitt) 07/01/2023-
06/30/2015
Real Time Monitoring of Stem Cell Differentiation
Role: Co-I

Coulter Foundation (Seed Grant) 10/01/2012-6/30/2013
An Inductive, Scaffold Based Device for Reconstruction of Joint Menisci: Temporomandibular Joint
Role: Multi-PI

Department of Defense (Advanced Regenerative Medicine-IV)

04/01/2010-03/30/2012

Composite Scaffold for Bone and Soft Tissue Attachment Targeted to Limb and Digit as well as Craniofacial
Role: Co-PI

Central Research Development Fund (Pitt)

08/01/2010-

07/31/2012

Degeneration Model of the TMJ

Role: PI

III. TEACHING

A. Courses Taught

| <u>Term</u> | <u>Course Name</u> | <u>Enrollment</u> | <u>Teaching Effectiveness</u> | <u>Format</u> |
|-------------|---|-------------------|-------------------------------|---------------------|
| Fall 2007 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 29 | 3.96/5.00 | Lecture, Project |
| Spring 2008 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 14 | 4.42/5.00 | Lecture, Project |
| Fall 2008 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 33 | 4.11/5.00 | Lecture, Project |
| Spring 2009 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 14 | 4.50/5.00 | Lecture, Project |
| Fall 2009 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 35 | 4.62/5.00 | Lecture, Project |
| Spring 2010 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 12 | 4.13/5.00 | Lecture, Project |
| Fall 2010 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 13 | 4.00/5.00 | Lecture, Project |
| Fall 2010 | ORBiol 5913 Contemporary Topics on TMJ (4 th Year Dental, Selective) | 6 | 5.00/5.00 | Lecture, Project |
| Spring 2011 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 19 | 4.47/5.00 | Lecture, Project |
| Fall 2011 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 17 | 4.12/5.00 | Lecture, Project |
| Fall 2011 | ORBiol 5913 | 3 | | Lecture, |

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|-------------|---|----|------------------|---------------------|
| | Contemporary Topics on TMJ (4 th Year Dental, Selective) | | | Project |
| Spring 2012 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 9 | 4.25/5.00 | Lecture, Project |
| Fall 2012 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 15 | 4.54/5.00 | Lecture, Project |
| Spring 2013 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 8 | 4.63/5.00 | Lecture, Project |
| Fall 2013 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 25 | 4.29/5.00 | Lecture, Project |
| Spring 2014 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 16 | 4.57/5.00 | Lecture, Project |
| Spring 2014 | ORBIol 3602 Contemporary Topics on TMJ (Graduate, Elective) | 4 | | Lecture, Project |
| Fall 2014 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 23 | 4.22/5.00 | Lecture, Project |
| Spring 2015 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 10 | 4.38/5.00 | Lecture, Project |
| Spring 2015 | ORBIol 3602 Contemporary Topics on TMJ (Graduate, Elective) | 3 | | Lecture, Project |
| Fall 2015 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 24 | 4.20/5.00 | Lecture, Project |
| Spring 2016 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 13 | 4.17/5.00 | Lecture, Project |

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|-------------|---|----|------------------|---------------------|
| Spring 2016 | ORBIol 3602 TMJ Biomechanics (Graduate, Elective) | 2 | | Lecture, Project |
| Spring 2016 | ORBIol 5913 Contemporary Topics on TMJ (4 th Year Dental, Selective) | 2 | | Lecture, Project |
| Fall 2016 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 18 | 4.18/5.00 | Lecture, Project |
| Spring 2017 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 19 | 4.59/5.00 | Lecture, Project |
| Spring 2016 | ORBIol 3602 TMJ Biomechanics (Graduate, Elective) | 1 | | Lecture, Project |
| Spring 2016 | ORBIol 3556 Foundations in Tissue Regeneration (Graduate, Required) | 4 | | Lecture, Project |
| Fall 2017 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 16 | 3.93/5.00 | Lecture, Project |
| Spring 2018 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 19 | 4.47/5.00 | Lecture, Project |
| Spring 2018 | ORBIol 3556 Foundations in Tissue Regeneration (Graduate, Required) | 5 | | Lecture, Project |
| Fall 2018 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 15 | 4.09/5.00 | Lecture, Project |
| Spring 2019 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 18 | 4.06/5.00 | Lecture, Project |
| Spring 2019 | ORBIol 5913 Contemporary Topics on TMJ (4 th Year Dental, Selective) | 5 | | Lecture, Project |

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|-------------|---|----|------------------|---------------------|
| Fall 2019 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 15 | 4.09/5.00 | Lecture, Project |
| Spring 2020 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 27 | 4.5/5.0 | Lecture, Project |
| Spring 2020 | ORBIol 3556 Foundations in Tissue Regeneration (Graduate, Required) | 5 | | Lecture, Project |
| Fall 2020 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 10 | 5.00/5.00 | Lecture, Project |
| Spring 2021 | Bioengineering 1002 Intramural Internship (Undergraduate, Required) | 22 | 4.71/5.00 | Lecture, Project |
| Spring 2022 | ORBIol 3556 Foundations in Tissue Regeneration (Graduate, Required) | 13 | | Lecture, Project |

B. Lectures Taught in Courses

| | | | |
|-------------|-------------------------------|-------------------|--------------|
| Spring 2023 | Current Topics in Oral Health | Dr. Juan Taboas | ODCS |
| Fall 2022 | Oral Tissues & Embryology | Dr. Elia Beniash | ODCS |
| Spring 2022 | Current Topics in Oral Health | Dr. Juan Taboas | ODCS |
| Fall 2021 | Oral Tissues & Embryology | Dr. Elia Beniash | ODCS |
| Summer 2021 | Pathobiology | Dr. Charles Sfeir | Periodontics |
| Spring 2021 | Current Topics in Oral Health | Dr. Juan Taboas | Oral Biology |
| Fall 2020 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Summer 2020 | Pathobiology | Dr. Charles Sfeir | Periodontics |

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|-------------|--------------------------------|----------------------|----------------|
| Spring 2020 | Current Topics in Oral Health | Dr. Juan Taboas | Oral Biology |
| Fall 2019 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Summer 2019 | Pathobiology | Dr. Charles Sfeir | Periodontics |
| Spring 2019 | Current Topics in Oral Health | Dr. Juan Taboas | Oral Biology |
| Fall 2018 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2018 | Current Topics in Oral Health | Dr. Juan Taboas | Oral Biology |
| Fall 2017 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2017 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2017 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2016 | ECM in Tissue Biology and Bioe | Dr. Bryan Brown | Bioengineering |
| Fall 2016 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2016 | Oral Biology Journal Club | Dr. Manika Govil | Oral Biology |
| Spring 2016 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2016 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2015 | ECM in Tissue Biology and Bioe | Dr. Bryan Brown | Bioengineering |
| Fall 2015 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2015 | Oral Biology Journal Club | Dr. Manika Govil | Oral Biology |
| Spring 2015 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2015 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2014 | ECM in Tissue Biology and Bioe | Dr. Bryan Brown | Bioengineering |
| Fall 2014 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2014 | Oral Biology Journal Club | Dr. Manika Govil | Oral Biology |

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|-------------|--------------------------------|----------------------|----------------|
| Spring 2014 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2014 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2013 | ECM in Tissue Biology and Bioe | Dr. Bryan Brown | Bioengineering |
| Fall 2013 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2013 | Oral Biology Journal Club | Dr. Manika Govil | Oral Biology |
| Spring 2013 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2013 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2012 | Oral Biology Journal Club | Dr. Manika Govil | Oral Biology |
| Fall 2012 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Spring 2012 | Biological Sciences 2 | Dr. Kathleen Vergona | Oral Biology |
| Spring 2012 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Fall 2011 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Summer 2011 | Genetics | Dr. Alex Vieira | Oral Biology |
| Summer 2011 | Pathobiology | Dr. Charles Sfeir | Oral Biology |
| Spring 2011 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Spring 2011 | Tissue Engineering | Dr. Kacey Marra | Bioengineering |
| Fall 2010 | Oral Tissues & Embryology | Dr. Elia Beniash | Oral Biology |
| Summer 2010 | Genetics | Dr. Alex Vieira | Oral Biology |
| Summer 2010 | Pathobiology | Dr. Charles Sfeir | Oral Biology |
| Spring 2010 | Regenerative Medicine | Dr. Kacey Marra | Bioengineering |
| Spring 2010 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Summer 2009 | Pathobiology | Dr. Charles Sfeir | Oral Biology |

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|-------------|-------------------------------|---------------------|----------------|
| Spring 2009 | Current Topics in Oral Health | Dr. Charles Sfeir | Oral Biology |
| Summer 2008 | Pathobiology | Dr. Charles Sfeir | Oral Biology |
| Summer 2008 | Occlusion and TMJ Management | Dr. David Donatelli | Prosthodontics |
| Spring 2008 | Functional Tissue Engineering | Dr. Michael Sacks | Bioengineering |

C. Group-Based Teaching of Facilitation

DENT5115

Health Promotion & Disease Prevention 1

Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018, Fall 2019

CDENT 5342

Introduction to Behavioral Dentistry

Spring 2013, Spring 2018, Spring 2020

DENT 5440

Senior Case Presentation

Spring 2011, 2013, 2014, 2015, 2018, 2019

D. Graduate Teaching Assistantships

Bioengineering Transport Phenomena (graduate course), Teaching Assistant (Fall, 2002)

Involved in the design of the course and its lectures.

Prepared all homework sets and exam; held weekly office hours.

Held weekly problem-solving sessions.

Tissue Culture Laboratory (undergraduate lab course), Teaching Assistant (Spring, 2003)

Trained students in the practice of sterile tissue culture techniques.

Bioengineering Transport Phenomena (undergraduate course), Teaching Assistant (Fall, 2003)

Held weekly problem-solving sessions.

Graded the mid-term exam.

E. Workshops Attended

Teaching Workshop. Hosted by the School of Engineering of the University of Pittsburgh. (June 17th-19nd, 2007). This workshop is designed to teach engineering faculty how to be more effective teachers.

Grant Writers' Seminars and Workshops, LLC: "Write Winning Career Proposals." Hosted by the University of Pittsburgh in Bethesda, MD (March 26th, 2006).

Mathematical Biosciences Institute Workshop on Cell and Tissue Engineering, Columbus, OH (October 2007). Opportunity to bring mathematicians with biologist/engineering to solve common problems and reach similar goals.

F. Post-Doctoral Fellows Mentored

1. Josh Stover. Center for Craniofacial Regeneration, Department of Oral and Craniofacial Sciences. University of Pittsburgh. CRISPR regulation of pain. November 2022-Present.
2. Rui Liang. Musculoskeletal Research Center, Department of Bioengineering. University of Pittsburgh, *Application of Small Intestine Submucosa to healing ligaments and tendons.* July 2005- January 2008. (Co-Advisor; Primary Advisor- Savio L-Y. Woo, Ph.D.)
3. Tan Nguyen. Musculoskeletal Research Center, Department of Bioengineering. University of Pittsburgh, *Effects of tensile loads on the functional tissue engineering of ligaments and tendons.* July 2005- September 2007. (Co-Advisor; Primary Advisor- Savio L-Y. Woo, Ph.D.)

G. Ph.D. Candidates Supervised

Under my direct supervision:

1. Sara Trbojevic. Center for Craniofacial Regeneration, Department of Bioengineering, University of Pittsburgh, Pre-Proposal, August 2020-Present.
2. Wuyang Li. Center for Craniofacial Regeneration, Department of Oral and Craniofacial Sciences, University of Pittsburgh, *Graduated,* August 2018- May 2022. (Primary Advisor).
3. Adam Chin. Center for Craniofacial Regeneration, Department of Bioengineering, University of Pittsburgh, *Graduated,* August 2013- May 2019. (Primary Advisor).
4. Jesse Lowe. Center for Craniofacial Regeneration, Department of Bioengineering, University of Pittsburgh, *Graduated,* July 2012- May 2017. (Primary Advisor).
5. Catherine Kunkle. Center for Craniofacial Regeneration, Department of Bioengineering, University of Pittsburgh, *Graduated.* August 2009- July 2014. (Primary Advisor).
6. Sarah Henderson. Center for Craniofacial Regeneration, Department of Bioengineering, University of Pittsburgh, *Graduated.* June 2008- July 2014. (Primary Advisor).

Others:

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|---|---|---------------------------|
| Da-Tren Chou member) (defended November/2015) | Ph.D. student, Bioengineering, University of Pittsburgh | (thesis committee member) |
| Nicole Ostrowski member) (defended November/2015) | Ph.D. student, Bioengineering, University of Pittsburgh | (thesis committee member) |
| Vineet Agrawal (defended July/2011) | Ph.D. student, Cellular and Molecular Pathology | (thesis committee member) |

H. M.S. Theses Supervised

Under my direct supervision:

1. Carlos Pinero. Center for Craniofacial Regeneration, Department of Oral and Craniofacial Sciences, University of Pittsburgh, August 2016- August 2018. (Primary Advisor).
2. Wuyang Li. Center for Craniofacial Regeneration, Department of Oral Biology, University of Pittsburgh, August 2016- August 2018. (Primary Advisor).
3. Xinyun Liu. Center for Craniofacial Regeneration, Department of Oral Biology, University of Pittsburgh, August 2012- May 2014. (Primary Advisor).
4. Robert Mortimer. Center for Craniofacial Regeneration, Department of Oral Biology, University of Pittsburgh, August 2012- May 2014. (Primary Advisor).

Others:

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|--|-------------------------------|---------------------------|
| Nick Kim (Defended 5/29/2020) | M.S. Resident, Prosthodontics | (thesis committee member) |
| David Wagner (Defended 5/15/2013) | M.S. Resident, Prosthodontics | (thesis committee member) |
| Christopher Dindal (Defended 4/27/2012) | M.S. Resident, Prosthodontics | (thesis committee member) |

I. Undergraduate Students Mentored

| | |
|------------------|---|
| Rohan Bansal | Biology, University of Pittsburgh, Summer 2016- Summer 2017 |
| Lyndsey Nagy | Biology, University of Pittsburgh, Spring 2016- Summer 2017 |
| Alexa Spokane | Biology, University of Pittsburgh, Spring 2016-Summer 2017 |
| Jigar Saraiya | Biology, University of Pittsburgh, Spring 2016 |
| Alex Weinstein | Bioengineering, University of Pittsburgh, Spring 2015-Spring 2016 |
| Jillian Gorski | Bioengineering, University of Pittsburgh, Fall 2012-Summer 2014 |
| Andrew George | Bioengineering, University of Pittsburgh, Summer 2012-Fall 2013 |
| Benjamin Wallace | Bioengineering, University of Pittsburgh, Spring 2010-Summer 2012 |

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| Riddhi Desai | Biology, University of Pittsburgh, Spring 2010-Summer 2012 |
| Manasa Madoori | Biology, University of Pittsburgh, Summer 2010-Summer 2012 |
| Khaliel Abdelrahim | Engineering, North Carolina A&T, Summer 2010 |
| Justina Pope | Biology, University of Pittsburgh, Fall 2009-Spring 2011 |
| Peter Kamelin | Bioengineering, University of Pittsburgh, Spring 2009-Summer 2011 |
| Vincent Myers | Biology, University of Pittsburgh, Spring 2009-Summer 2009 |
| Elden Groover | Engineering, North Carolina A&T, Summer 2009 |
| Thomas Chase | Bioengineering, University of Pittsburgh, Summer 2008 (MSRC intern), Fall 2008-Summer 2009 |
| David Gladowski | Bioengineering, University of Pittsburgh (MSRC intern), Summer 2007 |
| Danielle Dukes | Bioengineering, University of Pittsburgh (MSRC intern), Summer 2007 |

J. Dental First Professional

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|-------------------------|---|
| Spring 2019 | <u>Annie Litrenta</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Dean's Summer Scholar) |
| Spring 2018 | <u>Jacob Hirschi</u> , Dental First professional in Joint Degeneration and Pain, University of Pittsburgh (Dean's Summer Scholar) |
| Spring 2015-Summer 2018 | <u>Karunesh Chakote</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Independent Study) |
| Fall 2015-Summer 2016 | <u>Amber Hallowell</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Independent Study) |
| Summer 2015 | <u>Jose Jacas</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Dean's Summer Scholar) |
| Summer 2011 | <u>Betty Chao</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Dean's Summer Scholar) |
| Summer 2010 | <u>Matthew Maropis</u> , Dental First professional in Biomaterials/Tissue engineering, University of Pittsburgh (Dean's Summer Scholar) |

K. High School Research Project
2006 Josh Lai, St. Johns School, Vancouver Canada

IV. SERVICE

A. Committees

| | |
|--------------|--|
| 2019-Present | Faculty Senate |
| 2016-Present | Member, Conflict of Interest Committee (COIC) (University of Pittsburgh) Data Stewart (2022) |
| 2013-Present | Member, Chemical Hygiene Officers Committee (University of Pittsburgh) |
| 2011-Present | Member, Curriculum Committee (Oral Biology, University of Pittsburgh) |
| 2007-2021 | Director of Intramural Internship Program (Bioengineering, University of Pittsburgh) |
| 2009-2015 | Faculty Advisor of Student Research Group (School of Dental Medicine, University of Pittsburgh) |
| 2009-2011 | Faculty Advisor of Biomedical Engineering Society Student Chapter (Bioengineering, University of Pittsburgh) |

Service Activities

Ad hoc member of the Admissions Committee, School of Dental Medicine, University of Pittsburgh
Fall 2013, Fall 2014, Fall 2015, Fall 2016

Interviewer of Dental School Applicants, School of Dental Medicine, University of Pittsburgh
Fall 2012 (4 students), Fall 2014 (2 students), Fall 2015 (3 students), Fall 2021 (20 dental applicants and 5 advance standing applicants), Fall 2022 (5 applicants)

Preliminary Exam Committee, Department of Bioengineering, University of Pittsburgh
Biomechanics Track (2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2018, 2019, 2020, 2021)
Cell/Organ Track (2013, 2018)

Served as a judge at the dental and hygiene research competition for the Research Day at the School of Dental Medicine (2009, 2010, 2019, 2020)

Faculty Searches

Summer 2023. Director of MS Entrepreneurial program. Department of Bioengineering.

Spring 2022. Ergonomics Faculty Position. Department of Bioengineering.

Summer 2020. Research Assistant Professor. Department of Bioengineering.

Appeals Panels

Fall 2021-Spring 2022. Appeal for salary freeze. Chair of Panel.

Fall 2017. Appeal for denial of tenure.

B. Memberships in Professional and Scientific Societies

| | |
|--------------|---|
| 2022-Present | American Society of Mechanical Engineers (ASME) 2022 On-site judge for the PhD-level ASME-Student Paper Competition at SB3C 2022 2022 Mentor-Mentee for Diversity |
| 2021-Present | US Association for the Study of Pain |
| 2021-Present | Inclusion, Diversity, Equity, and Access Committee |
| 2021-Present | Scientific Program Committee |
| 2021-Present | Basic Science-Preclinical Special Interest Group (SIG) |
| 2007-Present | Biomedical Engineering Society |
| 2009-Present | Orthopaedic Research Society |
| 2020-2022 | Member of Network and Communications Committee for Meniscus Section |
| 2022-Present | Secretary for Meniscus Section |
| 2009-Present | International Association of Dental Research |
| 2009-Present | American Association of Dental Research |
| 2009-Present | American Society of Mechanical Engineers |
| 2012-Present | American Society of TMJ Surgeons (affiliate member) -- Invited |

C. Journals (reviewer, editor)

Academic Editor, *PLoS One*, 2010-2022.

Reviewer for *Annals of Biomedical Engineering*

Reviewer for *Archives of Oral Biology*

Reviewer for *Biomacromolecules*

Reviewer for *Biomedical Materials*

Reviewer for *Biomechanics*

Reviewer for *Biomechanical Engineering*

Reviewer for *Cellular and Molecular Bioengineering*

Reviewer for *Connective Tissue Research*

Reviewer for *European Journal of Oral Sciences*

Reviewer for *Journal of Dental Research*

Reviewer for *Micromechanics*

Reviewer for *Oral Sciences*

Reviewer for *Osteoarthritis and Cartilage*

Reviewer for *Orthodontics and Craniofacial Research*

Reviewer for *Orthopaedic Research*

Reviewer for *Royal Society Interface*

Reviewer for *Physiological Genomics*

Reviewer for *PLoS One*

Reviewer for *Tissue Engineering*

Reviews for May 2022-May 2023:

ECM Journal

Journal of Biomechanics

Journal of Orthopaedic Research
 Acta Biomaterialia
 Journal of Biomechanical Engineering
 Science Advances
 Osteoarthritis and Cartilage (2 manuscripts)
 Journal of Dental Research

D. Grants (reviewer)

Member of National Institute of Dental Research (NIDCR) Special Grants Review Committee (DSR) study section, National Institutes of Health, 2014-2020

Ad hoc Member of National Institute of Dental Research (NIDCR) Special Grants Review Committee (DSR) study section, National Institutes of Health, 2012, 2013, 2021, Spring 2022, Spring 2023

Ad hoc Member of Skeletal Biology Structure and Regeneration (SBSR) study section, National Institutes of Health, 2020, Fall 2021

Ad hoc Member of Musculoskeletal Tissue Engineering (MTE) study section, National Institutes of Health, Fall 2022

Ad hoc Mail Reviewer of RC1 stimulus grants, National Institutes of Health, 2009

E. Conferences Organization and Planning

| <u>Year</u> | <u>Organization</u> | <u>Position/Positions Held</u> |
|-------------|--|--------------------------------|
| 2023 | Eighth Meeting of TMJ Bioengineering Conference | Chair |
| 2022 | Seventh Meeting of TMJ Bioengineering Conference | Chair |
| 2018 | Sixth Meeting of TMJ Bioengineering Conference | Chair |
| 2016 | Fifth Meeting of TMJ Bioengineering Conference | Chair |
| 2014 | Fourth Meeting of TMJ Bioengineering Conference | Chair |
| 2014 | American Society of TMJ Surgeons | Program Committee |

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|------|---|-------------------------------|
| 2012 | Third Meeting of TMJ Bioengineering Conference | Chair |
| 2009 | Annual Meeting of the Biomedical Engineering Society | Student Volunteer Coordinator |
| 2008 | The XVI th International Conference on Mechanics in Medicine and Biology | Program Committee |
| 2007 | International Symposium on Ligaments and Tendons VII | Co-Chair |
| 2006 | International Symposium on Ligaments and Tendons VI | Co-Chair |

F. Session Organization, Planning, or Chair

| <u>Years</u> | <u>Organization</u> | <u>Session</u> |
|--------------|---|--|
| 2022 | American Association of Oral, Craniofacial and Dental Research | Current Standing of Image-Based Scaffold Design for Craniofacial Regeneration |
| 2018 | McGowan Institute of Regenerative Medicine Annual Retreat | Craniofacial Research Session Organizer/Chair |
| 2013 | American Association of Dental Research | Oral and Maxillofacial Surgery I (Chair) |
| 2011 | Summer Bioengineering Conference ASME | Tissue Engineering Session Chair |
| 2010 | 16th US National Congress of Theoretical and Applied Mechanics | TMJ Biomechanics Session Organizer/Chair |
| 2010 | Summer Bioengineering Conference ASME | Tissue Engineering, Session Chair |

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| 2008 | McGowan Institute of Regenerative Medicine Annual Retreat | Musculoskeletal Research Session Organizer/Chair |
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G. Abstract Reviewer for Conference

| <u>Years</u> | <u>Organization</u> |
|-----------------------------|---|
| 2016, 2017 | International Symposium of Ligaments and Tendons |
| 2010-2015, 2017, 2020, 2023 | Summer Bioengineering Conference ASME |
| 2013, 2023 | Biomedical Engineering Conference |

H. Editorial Work-Proceedings

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|------|---|
| 2007 | <u>International Symposium of Ligaments and Tendons – VII</u> , Woo, SL-Y., Almarza AJ , and Dede O. Co-Editors. |
| 2006 | <u>International Symposium of Ligaments and Tendons – VI</u> , Woo, SL-Y., Almarza AJ , Abramowitch SD, and Karaoglu S. Co-Editors. |