Curriculum vitae

Nic D. Leipzig, Ph.D.

Robert Iredell Associate Professor of Chemical, Biomolecular, and Corrosion Engineering

The University of Akron, Chemical and Biomolecular Engineering Whitby Hall 107A, Akron, OH 44325-3906

(330) 972-6881 nl21@uakron.edu

# Education

2001-2006 **Ph.D.**, Bioengineering, Rice University, Houston, TX.

Thesis title: “Growth factor effects on single chondrocyte biomechanics and gene expression”

Advisor: Dr. Kyriacos Athanasiou

1997-2001 **B.Eng.**, Chemical Engineering, McGill University, Montreal, QC.

**Training**

2006-2009 **Postdoctoral Fellow,** Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, ON.

Advisor: Dr. Molly Shoichet

**Appointments**

2015- **Associate Professor (with tenure)**, **Robert Iredell Chair**, Chemical and Biomolecular Engineering, University of Akron, Akron, OH.

2009-2015 **Assistant Professor**, **Robert Iredell Chair**, Chemical and Biomolecular Engineering, University of Akron, Akron, OH.

2010-present **Adjunct** **Faculty**, Biomedical Engineering, University of Akron, Akron, OH.

2010-present **Adjunct** **Faculty**, Integrated Biosciences Program, University of Akron, Akron, OH.

2011-present **Adjunct** **Faculty**, Faculty of Medicine, Case Western Reserve University, Cleveland, OH.

2013-present **Founder and CSO**, O2 RegenTech LLC, Akron, OH.

#  Peer-Reviewed Publications

**Summary from Google Scholar (June 2021):**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Citation indices**

|  |  |  |
| --- | --- | --- |
| **Citation indices** | **All** | **Since 2016** |
| Citations | 2348 | 1325 |
| h-index | 21 | 17 |
| i10-index | 37 | 34 |

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*Published /In Press/Accepted/Submitted*

(last name = corresponding author unless other-wise noted; +=shared authorship; \*=undergraduate)

*University of Akron affiliation*

52. Singh S, Lamichhane A, Nejad PR, Heiss J, Baumann H, Gudneppanavar R, **Leipzig N**, Konopka M, Luker G, Tavana H. Therapeutic Targeting of Tumor-Stromal HGF-cMET Signaling in an Organotypic Triple Negative Breast Tumor Model. 2021. Submitted.

51. Pukale DD, Gudneppanwar R, Farrag M, Baumann HJ, Konopka M, Shriver L, **Leipzig ND**. Osmoregulatory role of betaine and betaine/γ-aminobutyric acid transporter 1 in syringomyelia. 2021. Submitted and in revision.

50. Mansouri M, **Leipzig ND**. Advances in removing mass transport limitations for more physiologically relevant in vitro 3D cell constructs. Invited review to *Biophysics Reviews*. 2021. In Press. doi: 10.1063/5.0048837

49. Pukale DD, Farrag M, **Leipzig ND**. Detection of Locomotion Deficit in a Post-Traumatic Syringomyelia Rat Model Using Automated Gait Analysis Technique. 2021. Submitted. Available in BioRxiv doi:10.1101/2021.05.19.444781

48. Farrag M, Pukale DD, **Leipzig ND**. Micro-computed tomography utility for estimation of intraparenchymal spinal cord cystic lesions in small animals. *Neural Regeneration Research.*  2021. Nov;16(11):2293-2298. doi: 10.4103/1673-5374.310690

47. Nun N, Cruz M, Jain T, Tseng YM, Menefee J, Jatana S, Patil P, **Leipzig N**, McDonald C, Maytin E, Joy A. Thread Size and Polymer Composition of 3D Printed and Electrospun Wound Dressings Affect Wound Healing Outcomes in an Excisional Wound Rat Model. *Biomacromolecules*. 2020. Oct 12;21(10):4030-4042. doi: 10.1021/acs.biomac.0c00801.

46. Patil PS, Monsouri MS, **Leipzig ND**. Fluorinated Chitosan Microgels to Overcome Internal Oxygen Transport Deficiencies in Microtissue Culture Systems. *Advanced Biosystems*. 2020 Jul 19;e1900250. Online ahead of print. doi: 10.1002/adbi.201900250

45. Baumann HJ, Betonio P\*, Abeywickrama C, Shriver LP+, **Leipzig ND**+. Metabolomic and signaling programs induced by immobilized versus soluble IFN γ in neural stem cells. *Bioconjug Chem*. 2020. ep 16;31(9):2125-2135. doi: 10.1021/acs.bioconjchem.

44. Baumann HJ+, Mahajan G+, Ham TR, Betonio P\*, Kothapalli C, Shriver LP, **Leipzig ND**. Matrix mechanobiology of the chronic spinal cord injury scar. *Journal of the Mechanical Behavior of Biomedical Materials*. 2020. Oct;110:103953. doi: 10.1016/j.jmbbm.2020.103953.

44. Christie SM+, Ham TR+, Gilmore GT, Toth PD, **Leipzig ND**+, Smith AW+. Covalently Immobilizing Interferon-γ Drives Filopodia Production through Specific Receptor-Ligand Interactions Independently of Canonical Downstream Signaling. *Bioconjug Chem*. 2020;31(5):1362-1369. doi:10.1021/acs.bioconjchem.0c00105.

43. Ham TR, Pukale DD, Hamrangsekachaee M, **Leipzig ND**. Subcutaneous priming of protein-functionalized chitosan scaffolds improves function following spinal cord injury. *Mater Sci Eng C Mater Biol Appl*. 2020;110:110656. doi:10.1016/j.msec.2020.110656

42. Farrag M, Abri S, **Leipzig ND**. pH-dependent RNA isolation from cells encapsulated in chitosan-based biomaterials. *Int J Biol Macromol*. 2020;146:422-430. doi:10.1016/j.ijbiomac.2019.12.263

41. Abri S, Ghatpande AA, Ress J, Barton HA, **Leipzig ND.** Polyionic Complexed Antibacterial Heparin-Chitosan Nanoparticles for Antibiotic Delivery.” *ACS Applied Biomaterials.* 2019;2 (12), 5848-5858. doi: 10.1021/acsabm.9b00833.

40. Ham TR, Cox DG, **Leipzig ND**. Concurrent Delivery of Soluble and Immobilized Proteins to Recruit and Differentiate Neural Stem Cells. *Biomacromolecules*. 2019; 20(9):3445-3452. doi:10.1021/acs.biomac.9b00719.

39. Patil PS, Fathollahipour S, Inmann A, Pant A, Amini R, Shriver LP, **Leipzig ND**. Fluorinated Methacrylamide Chitosan Hydrogel Dressings Improve Regenerated Wound Tissue Quality in Diabetic Wound Healing. *Adv Wound Care* (New Rochelle). 2019;8(8):374-385. doi:10.1089/wound.2018.0887.

38. Ham TR, Farrag M, Soltisz AM, Lakes EH, Allen KD, **Leipzig ND**. Automated Gait Analysis Detects Improvements after Intracellular σ Peptide Administration in a Rat Hemisection Model of Spinal Cord Injury. *Ann Biomed Eng*. 2019;47(3):744-753. doi:10.1007/s10439-019-02198-0.

37. Farrag M, **Leipzig ND**. Subcutaneous Maturation of Neural Stem Cell-Loaded Hydrogels Forms Region-Specific Neuroepithelium. *Cells*. 2018;7(10):173. Published 2018 Oct 17. doi:10.3390/cells7100173.

1. Fathollahipour S, Patil PS, **Leipzig ND**. Oxygen Regulation in Development: Lessons from Embryogenesis towards Tissue Engineering. *Cells Tissues Organs*. 2018;205(5-6):350-371. doi:10.1159/000493162

35. Patil PS, Evancho-Chapman MM, Li H, Huang H, George RL, Shriver LP, **Leipzig ND**. Fluorinated methacrylamide chitosan hydrogel dressings enhance healing in an acute porcine wound model. PLoS One. 2018; 13(9):e0203371. Published 2018 Sep 5. doi:10.1371/journal.pone.0203371.

1. Mohrman AE, Farrag M, Grimm RK, **Leipzig ND**. Evaluation of in situ gelling chitosan-PEG copolymer for use in the spinal cord. *J Biomater Appl*. 2018;33(3):435-446. doi:10.1177/0885328218792824.
2. Jacobs BY, Lakes EH, Reiter AJ, Lake SP, Ham TR, **Leipzig ND**, Porvasnik SL, Schmidt CE, Wachs RA, Allen KD. The Open Source GAITOR Suite for Rodent Gait Analysis. *Sci Rep*. 2018;8(1):9797. 2018 Jun 28. doi:10.1038/s41598-018-28134-1.
3. Li H, Zheng J, Wang H, Becker ML, **Leipzig ND**. Neural stem cell encapsulation and differentiation in strain promoted crosslinked polyethylene glycol-based hydrogels. *J Biomater Appl*. 2018;32(9):1222-1230. doi:10.1177/0885328218755711.
4. Ham TR, **Leipzig ND**. Biomaterial strategies for limiting the impact of secondary events following spinal cord injury. *Biomed Mater*. 2018;13(2):024105. Published 2018 Feb 8. doi:10.1088/1748-605X/aa9bbb.

30. Jindal A, Puskas JE, Nedica K, Luebbers MT, Baker JR, McClain A, Paiva dos Santos B, Camassol M, Jennings W, Einsporn RL, **Leipzig ND**. Encapsulation and release of Zafirlukast from electrospun polyisobutylene-based thermoplastic elastomeric fiber mat. *European Polymer Journal.* 98:254-261. 2018. DOI:10.1016/j.eurpolymj.2017.11.012.

1. Akula S, Brosch IK\*, **Leipzig ND**. Fluorinated Methacrylamide Chitosan Hydrogels Enhance Cellular Wound Healing Processes. *Ann Biomed Eng*. 2017;45(11):2693-2702. doi:10.1007/s10439-017-1893-6.
2. Patil PS, **Leipzig ND**. Fluorinated methacrylamide chitosan sequesters reactive oxygen species to relieve oxidative stress while delivering oxygen. *J Biomed Mater Res A*. 2017;105(8):2368-2374. doi:10.1002/jbm.a.36079.
3. Ham TR, Farrag M, **Leipzig ND**. Covalent growth factor tethering to direct neural stem cell differentiation and self-organization. *Acta Biomater*. 2017;53:140-151. doi:10.1016/j.actbio.2017.01.068.

26. Mohrman AE, Farrag M, Huang H, Ossowski S, Haft S, Shriver LP, **Leipzig ND**. Spinal Cord Transcriptomic and Metabolomic Analysis after Excitotoxic Injection Injury Model of Syringomyelia. *J Neurotrauma*. 2017;34(3):720-733. doi:10.1089/neu.2015.4341.

25. Patil PS, Fountas-Davis N, Huang H, Michelle Evancho-Chapman M, Fulton JA, Shriver LP, **Leipzig ND**. Fluorinated methacrylamide chitosan hydrogels enhance collagen synthesis in wound healing through increased oxygen availability. *Acta Biomater*. 2016;36:164-174. doi:10.1016/j.actbio.2016.03.022.

1. Lawrence PG, Patil PS, **Leipzig ND**, Lapitsky Y. Ionically Cross-Linked Polymer Networks for the Multiple-Month Release of Small Molecules. ACS Appl Mater Interfaces. 2016;8(7):4323-4335. doi:10.1021/acsami.5b10070.
2. Li H+, Ham TR+, Neill N\*, Farrag M, Mohrman AE, Koenig AM\*, **Leipzig ND**. A Hydrogel Bridge Incorporating Immobilized Growth Factors and Neural Stem/Progenitor Cells to Treat Spinal Cord Injury. *Adv Healthc Mater*. 2016;5(7):802-812. doi:10.1002/adhm.201500810.

22. McCormick AM, Jarmusik NA, **Leipzig ND**. Co-immobilization of semaphorin3A and nerve growth factor to guide and pattern axons. *Acta Biomater*. 2015;28:33-44. doi:10.1016/j.actbio.2015.09.022

21. McCormick AM, Maddipatla MV, Shi S, Chamsaz EA, Yokoyama H, Joy A+, **Leipzig ND**+. “McCormick AM, Maddipatla MV, Shi S, et al. Micropatterned coumarin polyester thin films direct neurite orientation. *ACS Appl Mater Interfaces*. 2014;6(22):19655-19667. doi:10.1021/am5044328.

20. Li H, Koenig AM, Sloan P, **Leipzig ND**. In vivo assessment of guided neural stem cell differentiation in growth factor immobilized chitosan-based hydrogel scaffolds. *Biomaterials*. 2014;35(33):9049-9057. doi:10.1016/j.biomaterials.2014.07.038.

19. Kobelt LJ\*, Wilkinson AE, McCormick AM, Willits RK, **Leipzig ND**. Short duration electrical stimulation to enhance neurite outgrowth and maturation of adult neural stem progenitor cells. *Ann Biomed Eng*. 2014;42(10):2164-2176. doi:10.1007/s10439-014-1058-9

1. Wilkinson AE, Kobelt LJ\*, **Leipzig ND**. Immobilized ECM molecules and the effects of concentration and surface type on the control of NSC differentiation. *J Biomed Mater Res A*. 2014;102(10):3419-3428. doi:10.1002/jbma.35001
2. Li H, Visco DP, **Leipzig ND**. Confirmation of Predicted Activity for Factor XIa Inhibitors from a Virtual High-Throughput-Screening Approach. *AIChE Journal*.2014; 60(8):2741–2746. doi: 10.1002/aic.14508
3. Li H, Wijekoon A, **Leipzig ND**. Encapsulated neural stem cell neuronal differentiation in fluorinated methacrylamide chitosan hydrogels. *Ann Biomed Eng*. 2014;42(7):1456-1469. doi:10.1007/s10439-013-0925-0.
4. McCormick AM, Jarmusik NA, Endrizzi EJ, **Leipzig ND**. Expression, isolation, and purification of soluble and insoluble biotinylated proteins for nerve tissue regeneration. *J Vis Exp*. 2014;(83):e51295. Published 2014 Jan 22. doi:10.3791/51295*.*
5. McCormick AM, Wijekoon A, **Leipzig ND**. Specific immobilization of biotinylated fusion proteins NGF and Sema3A utilizing a photo-cross-linkable diazirine compound for controlling neurite extension. *Bioconjug Chem*. 2013;24(9):1515-1526. doi:10.1021/bc400058n.
6. Wijekoon A, Fountas-Davis N, **Leipzig ND**. Fluorinated methacrylamide chitosan hydrogel systems as adaptable oxygen carriers for wound healing. *Acta Biomater*. 2013;9(3):5653-5664. doi:10.1016/j.actbio.2012.10.034*.*
7. Li H, Wijekoon A, **Leipzig ND**. 3D differentiation of neural stem cells in microporous photopolymerizable hydrogel scaffolds. PLoS One. 2012;7(11):e48824. doi:10.1371/journal.pone.0048824.
8. McCormick AM, **Leipzig ND**. Neural regenerative strategies incorporating biomolecular axon guidance signals. *Ann Biomed Eng*. 2012;40(3):578-597. doi:10.1007/s10439-011-0505-0. *Selected for Cover Art*.
9. **Leipzig ND**, Wylie RG, Kim H, Shoichet MS. Differentiation of neural stem cells in three-dimensional growth factor-immobilized chitosan hydrogel scaffolds. *Biomaterials*. 2011;32(1):57-64. doi:10.1016/j.biomaterials.2010.09.031.

*At previous institutions*

9. **Leipzig ND**, Shoichet MS. The effect of substrate stiffness on adult neural stem cell behavior. Biomaterials. 2009;30(36):6867-6878. doi:10.1016/j.biomaterials.2009.09.002.

1. **Leipzig ND**+, Xu C+\*, Zahir T, Shoichet MS. Functional immobilization of interferon-gamma induces neuronal differentiation of neural stem cells. *J Biomed Mater Res A*. 2010;93(2):625-633. doi:10.1002/jbm.a.32573.
2. T Zahir, YF Chen, JF MacDonald, **N Leipzig**, CH Tator, MS Shoichet. Neural stem/progenitor cells differentiate to neurons by the combined action of dibutyryl cAMP and interferon-gamma. *Stem Cells and Development*. 18(10):1423-1432, 2009.
3. Y Aizawa, **Leipzig N**, T Zahir T, Shoichet MS. The effect of immobilized platelet derived growth factor AA on neural stem/progenitor cell differentiation on cell-adhesive hydrogels. *Biomaterials*. 2008; 29(35):4676-4683, 2008.
4. Yu LMY, **Leipzig ND**, Shoichet MS. Promoting neuron adhesion and growth. *Materials Today*. 2008;11(5):36-43. doi: 10.1016/S1369-7021(08)70088-9
5. **Leipzig ND**, Athanasiou KA. Static compression of single chondrocytes catabolically modifies single-cell gene expression. *Biophys J*. 2008;94(6):2412-2422. doi:10.1529/biophysj.107.114207.
6. Eleswarapu SV\*, **Leipzig ND**, Athanasiou KA. Gene expression of single articular chondrocytes. *Cell Tissue Res*. 2007;327(1):43-54. doi:10.1007/s00441-006-0258-5.
7. **Leipzig ND**, Eleswarapu SV\*, Athanasiou KA. The effects of TGF-beta1 and IGF-I on the biomechanics and cytoskeleton of single chondrocytes. *Osteoarthritis Cartilage*. 2006;14(12):1227-1236. doi:10.1016/j.joca.2006.05.013.
8. **Leipzig ND**, Athanasiou KA. Unconfined creep compression of chondrocytes. *J Biomech*. 2005;38(1):77-85. doi:10.1016/j.jbiomech.2004.03.013.

# *In preparation*

1. Hamrangsekachaee M, Baumann HJ, Pukale DD, Shriver LP, **Leipzig ND**. Utilizing the subcutaneous foreign body response to pre-condition neural stem cell seeded hydrogels for application to central nervous system regeneration. 2021. In Preparation.
2. Pukale DD, Lazarenko D, Shriver LP, Khabaz F, **Leipzig ND**. Osmotic contribution of synthesized betaine by choline dehydrogenase with response to post-traumatic syringomyelia. 2021. In Preparation.
3. Mansouri M, Kothapalli CR, Beemer S, **Leipzig ND**. Role of fluorinated microparticles as a regulator of cell survival and function in the large liver spheroids. 2021. In Preparation.

# Book Chapters

1. AE Wilkinson, AM McCormick, **ND Leipzig**. “Central nervous system tissue engineering: current considerations and strategies.”Synthesis lectures on tissue engineering. KA Athanasiou and JK Leach Eds., Morgan & Claypool Publishers. 1-120, 2011. DOI: 10.2200/S00390ED1V01Y201111TIS008
2. **ND Leipzig**, KA Athanasiou. “Cartilage regeneration*.” The Encyclopedia of Biomaterials and Biomedical Engineering*. G. Wnek, G. Bowlin Eds., 2nd Ed, Informa Healthcare USA Inc: New York. Vol. 1, 552-560, 2008.

# Patents

4. **Leipzig ND**, Patil PS. Multi-functional oxygenating microparticle loaded cell aggregates. Filed 4/11/19 as PCT. US Patent App. 17/046,921

3.**Leipzig ND**, Wijekoon A. Hydrogel for wound dressing, comprises crosslinked polymer having pendant fluorine group. WO2013112863-A1. (*Filed EU, Canada, India 7/25/14*)

2. **Leipzig ND**, Wijekoon A. Fluorinated polymerizable hydrogels for wound dressings and methods of making same, USA, 10,335,490, 2019-7-2.

1. **Leipzig ND**, Wijekoon A. Hydrogel for wound dressing, comprises crosslinked polymer having pendant fluorine group. CN107522880A, China, 2017-12-29.

**Conference Proceedings and Presentations**

65. DD Pukale, **ND Leipzig.** Osmoregulatory role of betaine and betaine/γ-aminobutyric acid Transporter 1 in post-traumatic syringomyelia. 262nd ACS National Meeting & Exposition. Aug 22- Aug 26, 2021. Atlanta, Georgia. Oral presentation.

64. M Hamrangsekachaee, HJ Baumann, DD Pukale, LP Shriver, **ND Leipzig.** Understanding the role of subcutaneous priming for improving tissue engineered scaffolds for spinal cord injury treatment. Society For Biomaterials 2021 Annual Meeting and Exposition, virtual, April 20 – 23, 2021. Oral presentation.

63. M Hamrangsekachaee, HJ Baumann, DD Pukale, LP Shriver, **ND Leipzig.** Quantification of Foreign Body Response to Subcutaneously Primed Neural Stem Cell Seeded Chitosan Scaffolds for Application to Spinal Cord Injury. 2020 Virtual AIChE Annual Meeting. November 16-20, 2021. Poster.

62. M Mansouri, **N Leipzig** Regulation of the Liver Spheroid Microenvironment Using Engineered Oxygenating Microparticles. BMES Annual Meeting, October 14-17, 2020. Poster and short video.

61. DD Pukale, TR Ham, M Hamrangsekachaee, **ND Leipzig.** “Subcutaneous Priming of Neural Stem Cell-Seeded Scaffolds Improves Function Following Spinal Cord Injury”. Biomaterials Day Conference organized by Society for Biomaterials and CWRU, Cleveland, OH, 26th October 2019. Oral presentation.

60. DD Pukale, TR Ham, M Hamrangsekachaee, **ND Leipzig**. “Subcutaneous Priming of Neural Stem Cell-Seeded Scaffolds Improves Function Following Spinal Cord Injury”. Biomedical Forum organized by CMU, Pittsburgh, PA, 19 - 20th September 2019. Poster Presentation.

59 DD Pukale, M Farrag, **ND Leipzig**. “Quantitative evaluation techniques for syrinx size and functional deficits in a rat model” Chiari malformation, syringomyelia, and Ehlers-Danlos syndrome (CSF Flow) Conference, Buffalo, NY, 25-28th June 2019. Oral presentation.

58. DD Pukale, M Farrag, **ND Leipzig.** “Investigating the Role of Betaine Regulation in Syringomyelia”. Engineering Design Day Symposium, Akron, OH, 26th April 2019. Poster Presentation. – Best Graduate Poster Award.

57. DD Pukale, M Farrag, **ND Leipzig**. “Investigating the Role of Betaine Regulation in Syringomyelia”. UA Interdisciplinary Symposium, Akron, OH, 9th April 2019. Poster Presentation. – EXL Center Community Engagement Award.

56. TR Ham, D Pukale, **ND Leipzig**. “Subcutaneous maturation of neural stem cell-seeded scaffolds to treat spinal cord injury”. Society for Neuroscience Annual Meeting. November 3-7, 2018, San Diego, CA,USA. Poster.

56. TR Ham, SM Christie, AW Smith, **ND Leipzig**. “Protein Immobilization Drives Unique, Matrix-Dependent Receptor-Ligand Interactions and Behaviors in Multiple Cell Types.” Signal Transduction by Engineered Extracellular Matrices Gordon Research Conference. July 22 -27, 2018 Proctor Academy in Andover, NH USA. Poster.

55. **ND Leipzig**. TR Ham, M Farrag, HJ Bauman. L Shriver. “Tethered IFN-gamma signaling to direct adult neural stem cell central nervous system organogenesis.” Signal Transduction by Engineered Extracellular Matrices Gordon Research Conference. July 22 -27, 2018 Proctor Academy in Andover, NH USA. Poster.

54. TR Ham, SM Christie, AW Smith, **ND Leipzig**. “Protein Immobilization Drives Unique, Matrix-Dependent Receptor-Ligand Interactions and Behaviors in Multiple Cell Types.” Signal Transduction by Engineered Extracellular Matrices Gordon Research Conference. July 22 -27, 2018 Proctor Academy in Andover, NH USA. Poster.

1. H Baumann, L Shriver, **ND Leipzig** “Adult Neural Stem Cell Differentiation in IFNγ Immobilized Chitosan Hydrogel Conduits.” SFB 2018 Annual Conference, Atlanta, GA, USA. April 13, 2018. Oral presentation.
2. TR Ham, SM Christie, AW Smith, **ND Leipzig**. “Investigation of Covalently Tethered Interferon-γ Receptor-Ligand Signaling.” SFB 2018 Annual Conference, Atlanta, GA, USA. April 11-13, 2018. Poster.
3. PS Patil, **ND Leipzig**. “Oxygenating Microparticles for Localized Oxygenation to 3D Tissue Environments.” SFB 2018 Annual Conference, Atlanta, GA, USA. April 12, 2018. Presentation.
4. S Fathollahipour, **ND Leipzig**. “Heparin-chitosan Based Nanoparticles for Wound Healing Antibiotic Delivery.” SFB 2018 Annual Conference, Atlanta, GA, USA. April 11-13, 2018. Poster.
5. M Farrag, **ND Leipzig**. “Subcutaneous maturation of adult NSC-loaded biomaterial scaffolds to spinal cord regionalized neuro epithelium.” SFB 2018 Annual Conference, Atlanta, GA, USA. April 11-13, 2018. Poster and Presentation.

48. AD McClain, A Jindal, **N Leipzig**, J Puskas. Anti-inflammatory effect of drug-eluting electrospun polyisobutylene-based thermoplastic elastomeric fiber mat. American Chemical Society Meeting. 2018. Poster.

1. PS Patil, A Inmann, LP Shriver, **ND Leipzig**. “Oxygenating Hydrogel Dressings Improve Diabetic Wound Healing.” UM SFB Biomaterials Day, October 2017, Ann Arbor, MI, USA October 2017. Presentation.
2. M Farrag, **ND Leipzig**. “Subcutaneous maturation of adult NSC-loaded biomaterial scaffolds to spinal cord regionalized neuro epithelium.” UM SFB Biomaterials Day, Ann Arbor, MI, USA. October 2017. Poster.
3. AE Mohrman, MA Farrag, **ND Leipzig**. “Injectable chitosan-PEG based hydrogels for CNS local delivery in syringomyelia models” SFB 2019 Annual Conference, Minneapolis, MN. April 2017. Poster.
4. PS Patil, A Inmann, **ND Leipzig**. “Oxygenating Hydrogel Dressings Improve Diabetic Wound Healing.” 30th Annual Symposium on Advanced Wound Care Spring/Wound Healing Society. San Diego, CA. April 2017. Poster.
5. TR Ham, DG Cox, **ND Leipzig**. “Recruitment and Differentiation of Neural Stem Cells Using Soluble and Immobilized Growth Factors.” TERMIS-AM. San Diego, CA. December 2016. Poster.
6. PS Patil, EM Chapman, H Huang, RL George, LP Shriver, **ND Leipzig**. “Oxygenated Hydrogels Enhance Wound Healing.” Heal Ohio. Akron, OH. October 28, 2016. Poster.
7. A Sridhar, **ND Leipzig**. “Fluorinated Methacrylamide Chitosan Hydrogels Improve Cellular Wound Healing Processes.” Heal Ohio. Akron, OH. October 28, 2016. Poster.
8. TR Ham, M Farrag, **ND Leipzig**. “Covalent Immobilization of Azide-Tagged Interferon-γ for the Generation of Adult Stem Cell-Derived Neuroepithelium.” World Biomaterials Conference. Montreal, QC, Canada. 5/21/2016. Podium Presentation.

39. PS Patil, H Huang, LP Shriver, EM Chapman, RL George, J Weaver, **ND Leipzig**. “Oxygenated fluorinated methacrylamide chitosan hydrogel dressings enhance wound healing through improvement in targeted metabolic processes.” World Biomaterials Conference. Montreal, QC, Canada. 5/20/2016. Podium Presentation.

38. PS Patil, H Huang, LP Shriver, EM Chapman, RL George, J Weaver, **ND Leipzig. “**Oxygenated Fluorinated Methacrylamide Chitosan Hydrogel Dressings Enhance Wound Healing through Improvement in Targeted Metabolic Processes.” 9th Annual Translational to Clinical (T2C) Regenerative Medicine Wound Care Conference. Columbus, OH. March 16, 2016. Poster.

37. PS Patil, N Fountas-Davis, P Joshi P, H Huang, LP Shriver, JA Fulton, **ND Leipzig.** “Chitosan Based Hydrogels for Delivering Oxygen and Sequestering Reactive Oxygen Species in Wound Healing.” SFB Annual Fall Meeting, Charlotte, NC. April 18, 2015. Podium Presentation. (Travel Award)

36. N Fountas-Davis, PS Patil, **ND Leipzig**. “Oxygenating Chitosan-Perfluorocarbon Hydrogel Dressings for Accelerated Wound Healing.” TERMIS-AM. Washington, DC. December 5, 2014. Podium Presentation.

35. H Li, T Ham, A Wilkinson, A Koenig, **ND Leipzig**. “Spinal cord injury treatments tested in vivo integrating neural stem cell delivery and lineage specification via immobilized growth factors.” Biomedical Engineering Society 2014 Annual Fall Meeting. October 24, 2012. San Antonio, TX. Poster.

35. A Wilkinson, M Farrag, S Haft, P. Joshi, H Huang, LP Shriver, **ND Leipzig**. “Transcriptomics and metabolomics of surgically-induced cervical syringomyelia.” Biomedical Engineering Society 2014 Annual Fall Meeting. October 24, 2012. San Antonio, TX.

34. H Li, P Sloan, K Bondor, A Koenig, **N Leipzig**. “In Vivo Assessment of Guided Neural Stem Cell Differentiation in Growth Factor Immobilized Hydrogel Scaffolds.” SFB Annual Fall Meeting, Denver, CO. April 19, 2014. Podium Presentation.

33. P Alayamini, J Jernigan, R McMillen; G Chen, **N Leipzig**, Y Yun, K Cavicchi. “From the lab-bench to the classroom: Three RET experiences at the University of Akron” 45th National Meeting of the American-Chemical-Society. New Orleans, LA. Apr 7-11, 2013. Podium Presentation.

32. EA Evans, JR Elliot, **ND Leipzig**. “Project Management and Teamwork: A Vertically Integrated Team Design Project for All Students in Chemical Engineering.” AIChE Annual Fall Meeting, San Francisco, CA. November 6, 2013. Podium Presentation.

31. N Fountas-Davis, **ND Leipzig**. “Enhancing healing of chronic wounds using chitosan-based, oxygen-enhanced, fluorinated hydrogels.” UASIS, The University of Akron, April 11, 2013. Podium Presentation.

30. AM McCormick, **ND Leipzig**. “Immobilization scheme utilizing a photopolymerizable crosslinker and biotinylated fusion proteins for neural tissue engineering applications.” AIChE Annual Fall Meeting, Pittsburgh, PA. November 1, 2012. Podium Presentation.

29. H Li, A Wijekoon, **ND Leipzig**. “Neural stem cell 3D neuronal differentiation in fluorinated methacrylamide chitosan hydrogels.” AIChE Annual Fall Meeting, Pittsburgh, PA. October 31, 2012. Podium Presentation.

28. L Kobelt\*, A Wilkinson, **ND Leipzig**. “Electrical stimulation to enhance neurite outgrowth and differentiation of neural stem cells.” Biomedical Engineering Society 2012 Annual Fall Meeting. October 27, 2012. Atlanta, GA. Podium Presentation.

27. H Li, K Stakleff, P Sloan, **ND Leipzig**. “Spatial differentiation of neural stem cells in 3-D grow factor immobilized photopolymerizable hydrogel scaffolds Neuroscience 2012 Annual Fall Meeting. October 16, 2012. New Orleans, LA. Poster.

26. AM McCormick, **ND Leipzig**. “Precise immobilized patterning of fusion proteins nerve growth factor and semaphorin3A facilitate DRG axon guidance.” Neuroscience 2012 Annual Fall Meeting. October 16, 2012. New Orleans, LA. Poster.

25. AE Wilkinson, **ND Leipzig**. “Axonal strain as a regulator of neural stem cell differentiation.” Neuroscience 2012 Annual Fall Meeting. October 16, 2012. New Orleans, LA. Poster.

24. L Kobelt\*, A Antonas\*, A Wilkinson, **ND Leipzig**. “Electrical stimulation to enhance neurite outgrowth and differentiation in neural stem cells.” AIChE Regional Conference 2012. University of Akron, Akron, OH. April 21, 2012. Presentation. (Selected as second place in competition)

23. EJ Endrizzi\*, AM McCormick, **ND Leipzig**. “Methacrylamide chitosan aids in neuronal differentiation in 2D and 3D environments.” AIChE Regional Conference 2012. University of Akron, Akron, OH. April 21, 2012. Poster.

22. L Kobelt\*, A Antonas\*, A Wilkinson, **ND Leipzig**. “Electrical stimulation to enhance neurite outgrowth in neural stem cells.” 121st meeting of the Ohio Academy of Science. Ashland University, Ashland, OH. April 14, 2012. Poster.

21. EJ Endrizzi\*, AM McCormick, **ND Leipzig**. “Methacrylamide chitosan aids in neuronal differentiation in 2D and 3D environments.” 121st meeting of the Ohio Academy of Science. Ashland University, Ashland, OH. April 14, 2012. Poster.

20. A Wijekoon, **ND Leipzig**. “Oxygen rich hydrogel scaffolds for tissue regeneration and deep wound healing.” BMES-SPRBM meeting. San Juan, Puerto Rico. Jan 6, 2011. Poster and Presentation. (Travel Award)

19. AM McCormick, EJ Endrizzi\*, **ND Leipzig**. “Spatial axon guidance utilizing covalently bound attractive and repulsive fusion proteins.” Biomedical Engineering Society 2011 Annual Fall Meeting. Hartford, CT. Poster. (Travel Award)

18. H Li, **ND Leipzig.** “Differentiation of neural stem cells in 3-D fast-macroporous photopolymerizable hydrogel scaffolds.” Biomedical Engineering Society 2011 Annual Fall Meeting. Hartford, CT. Poster. (Travel Award)

17. AE Wilkinson, LJ Kobelt\*, **ND Leipzig**. “Differentiation and tensile elongation of neural stem cells for neural tissue engineering.” Biomedical Engineering Society 2011 Annual Fall Meeting. Hartford, CT. Poster. (Travel Award)

16. A Wijekoon, **ND Leipzig**. “Novel fluorinated methacrylamide chitosan hydrogels as oxygen carriers for clinical application.” Summa Research Forum 2011. Akron, OH. Sept 23, 2011. Poster.

15. AM McCormick, EJ Endrizzi\*, **ND Leipzig**. “Immobilized attractive and repulsive fusion proteins facilitate axon guidance.” Summa Research Forum 2011. Akron, OH. Sept 23, 2011. Poster

14. H Li, **ND Leipzig**. “3-D differentiation of neural stem cells in fast-macroporous photopolymerizable hydrogel scaffolds for spinal cord repair.” Summa Research Forum 2011. Akron, OH. Sept 23, 2011. Poster.

13. AE Wilkinson, LJ Kobelt\*, **ND Leipzig**. “Defined neural progenitor cell differentiation strategies for generating neuron and oligodendrocyte populations.” Summa Research Forum 2011. Akron, OH. Sept 23, 2011. Poster.

12. **ND Leipzig**,MS Shoichet. “Immobilization of interferon-gamma guides neuronal differentiation of neural stem cells.” Biomedical Engineering Society 2009 Annual Fall Meeting. Pittsburgh, PA. Oct. 9, 2009. Podium Presentation.

1. **ND Leipzig,** MS Shoichet. “Neural progenitor/stem cell differentiation using cues from the stem cell niche.” Ontario Ministry of Research and Innovation Symposium. Toronto, ON. Oct.6, 2008. Poster.

10. **ND Leipzig,** MS Shoichet. “Neural stem cell 2D and 3D responses to substrate stiffness.” Biomedical Engineering Society 2008 Annual Fall Meeting. St. Louis, MO. October 2, 2008.Podium Presentation.

9. **ND Leipzig,** MS Shoichet. “Photopolymerizable chitosan for studying the effects of substrate stiffness on neural stem cell differentiation.” World Biomaterials Congress 2008. Amsterdam, The Netherlands. May 29, 2008. Podium Presentation.

8. D Saro, **ND Leipzig**, A Hsieh, BG Amsden, S Waldman,MS Shoichet. “Tissue engineering of neural stem progenitor cells on a biodegradable electrospun polymeric scaffold.” Advanced Foods and Materials Network Annual Conference. Vancouver, BC. June 1, 2008. Poster.

7. **ND Leipzig,** MS Shoichet. “Neural progenitor cell differentiation and the effects of substrate stiffness.” Stem Cell Network 2007 Annual General Meeting. Toronto, ON. Nov. 7-8, 2007. Poster.

6. SV Eleswarapu\*, **ND Leipzig**, KA Athanasiou. “Factors influencing the gene expression of single chondrocytes.” Biomedical Engineering Society 2005 Annual Fall Meeting. Baltimore, MD. Sept. 30, 2005. Poster.

5. **ND Leipzig**, KA Athanasiou. “Biomechanical response of single chondrocytes to growth factors.” Biomedical Engineering Society 2004 Annual Fall Meeting. Philadelphia, PA. Oct. 15, 2004. Podium Presentation.

4. **ND Leipzig**, KA Athanasiou. “Compression of single chondrocytes and biomechanical response to TGF-β1.” NIH Symposium. Houston, TX. May 4, 2004. Poster.

3. **ND Leipzig**, KA Athanasiou. “Material properties of single chondrocytes under unconfined compression.” The 50th Annual Meeting of the Orthopaedic Research Society. San Francisco, CA. Mar. 7, 2004. Podium Presentation.

2. **ND Leipzig**, AC Shieh, KA Athanasiou. “Gene expression in bovine articular chondrocytes.” NIH IGERT Symposium. Houston, TX. Jan. 11, 2003. Poster.

1. **ND Leipzig**, KA Athanasiou. “Basic issues of articular cartilage healing.” *Edward T. Smith Orthopaedic Lectureship: Articular Cartilage*. G.P. Harvey, Chair. Houston, TX. Nov. 8, 2002.

(\*undergraduate)

# Invited Talks

24. **ND Leipzig**. Hydrogel systems for delivering and controlling local oxygenation. University of Pittsburgh Oral Biology Seminar Series. Virtual. October 27, 2020.

23. **ND Leipzig**, D Pukale, M Farrag, AE. Mohrmon, LP Shriver. Investigation of the role of betaine synthesis and transport in syrinx. Chiari malformation, syringomyelia, and Ehlers-Danlos syndrome (CSF Flow) Conference, Buffalo, NY, 25-28th June 2019. Talk.

22. **ND Leipzig**. Priming neural stem cells to functionally regenerate the spinal cord after injury via a biomaterial-based subcutaneous maturation approach. 6th Annual Midwest Conference on Cell Therapy and Regenerative Medicine. Kansas City, MO, USA. September 14, 2018.

21. **ND Leipzig**. Understanding and Targeting the Molecular Pathology of Syringomyelia. Conquer Chiari Research Center Open House. Akron, Ohio, USA. July 21, 2018.

20. **ND Leipzig**. Regenerative Medicine Approaches for the Central Nervous System. Cleveland State University, Cleveland, OH, USA. October 18, 2017.

19. **ND Leipzig**. All I know: an Alaskan’s Biomedical Journey. Special session to honor Kerry and Kiley Athanasiou. BMES annual conference. Phoenix, AZ, USA October 13, 2017.

18. **ND Leipzig**. Oxygenating biomaterial-based hydrogel dressings for accelerated wound healing. Heal Ohio. Akron, OH. October 28, 2016.

17. **ND Leipzig**. Fluorinated methacrylamide chitosan: biobased and biologically derived materials for accelerated wound healing. Lubrizol Learn Seminar. Brecksville, OH, USA. August 20, 2015.

16. **ND Leipzig**. Fluorinated methacrylamide chitosan: biobased and biologically derived materials for accelerated wound healing. Lake Erie Chapter of the Society of Cosmetic Chemists 1st Quarter Meeting. Akron, OH, USA. March 17, 2015. *Main speaker*.

15. **ND Leipzig**. Central nervous system tissue organogenesis via precise growth factor tethering. 2015 NRCM retreat. Case Western Reserve University. Cleveland, OH, USA. March 6, 2015.

14. **ND Leipzig**. Central nervous system tissue organogenesis via precise growth factor tethering. 2015 Cellular and Molecular Bioengineering Conference. St. Thomas, USVI, USA. January 7, 2015. *Rising Star Award talk*.

13. **ND Leipzig**, A.E. Wilkinson, M. Farrag, S. Haft, P. Joshi, H. Huang, L. P. Shriver. Transcriptomics and metabolomics analyses to reveal the syrinx biochemical environment in a rat model of cervical syringomyelia. Conquer Chiari Research Conference 2014, Akron, Ohio, USA. Nov 7, 2014.

12. **ND Leipzig**. Guided regeneration via oxygenated biomaterial-growth factor platforms. Ohio State Center for Regenerative Medicine and Cell Based Therapies (CRMCBT) 2nd Annual Retreat, Mohican State Park Lodge, OH, July 26 - 27, 2013.

11. **ND Leipzig**. Guiding neuronal differentiation and extension via engineered cues. Biomedical Engineering Lecture Series. Case Western Reserve University, Cleveland, OH. May 3, 2013.

10. **ND Leipzig**. Guiding neuronal differentiation and extension via engineered cues. Biology Lecture Series. University of Akron, Akron, OH. April 18, 2013.

9. **ND Leipzig**, L Kobelt, AM McCormick, RK Willits. “Uncovering the role of applied electrical fields in neurogenesis.” 2013 Cellular and Molecular Bioengineering Conference. Hapuna Beach Prince Hotel, Waimea, HI. January 4, 2013.

8. **ND Leipzig**. Guiding neuronal differentiation via biomaterial-growth factor platforms. National Center for Regenerative Medicine Annual Retreat. Case Western Reserve University, Cleveland, OH. November 12, 2012.

7. **ND Leipzig**. Engineered Environments for Nervous System Regeneration. Anatomy and Neurobiology Lecture series. North East Ohio Medical University, Rootstown, OH. June 14, 2012.

6. **ND Leipzig**. Engineered Environments for Nervous System Regeneration. Center for Biomedical Engineering Lecture series. Brown University, Providence, RI. March 23, 2012.

5. **ND Leipzig**. Engineered Environments for Central Nervous System Regeneration. Biomaterials Symposium. University of Akron, Akron, OH. October 26, 2011.

4. **ND Leipzig.** Tissue engineering the nervous system. Biomedical Engineering Lecture Series. Ohio University, Athens, OH. May 10, 2011.

3. **ND Leipzig**. Tissue engineering the nervous system. Chemical and Petroleum Engineering Lecture Series. University of Kansas, Lawrence, KS. April 26, 2011.

1. **ND Leipzig**. The role of mechanobiology and the microenvironment in cell and stem cell function. Biomedical Engineering Lecture Series. University of Akron, Akron, OH. Jan. 22, 2010.
2. **ND Leipzig**, KA Athanasiou. Biomechanics of single chondrocytes and osteoarthritis. Arthritis Foundation-Segal Osteoarthritis Symposium. Evanston, IL. Sept. 9, 2006.

# Honors and Awards

University of Akron, College of Engineering, Outstanding Researcher Award, 2018

Acta Biomaterialia Outstanding Reviewer Award, 2016

Rising Star Award, CMBE-BMES young investigator award, 2015

Iwao Yasuda Award, CMBE-BMES service award, 2014

University of Akron Faculty Research Summer Fellowship, 2011

Ontario Ministry of Research and Innovation Postdoctoral Fellowship, 2007-2009

NIH Biotechnology Training Grant, 2002-2004

Rice Entry Graduate Fellowship, 2001

All Canadian Honours and McGill Principal’s Award 1999-2001

James McGill Scholarship, 1997-2000

# Funding

*Ongoing*

1. Robert Iredell Endowment. University of Akron. 08/15/09-present.
2. NSF:CBET 2042116/ 2042117: Collaborative Research: Glial scar morphology informed tunable biomimetic platforms toward spinal cord injury repair. $599,995 total (299,999 to PI: Leipzig, 100% IDC). 06/01/21-05/31/24.
3. NIH:NIAMS R21AR074743: Development of synergistic oxygenating antibacterial hydrogel dressings for reducing infection in diabetic wounds. $357,979. (PI: Leipzig, 100% IDC). 04/15/20-04/14/22.

*Completed*

1. Column of hope/Conquer Chiari: Investigation of the role of betaine synthesis and transport in CNS cell volume regulation. $33,626 (PI, 100% IDC); 7/1/19-1/15/21
2. NIH:NIDDK R41DK105704: OXAID: Oxygenating Hydrogel for Diabetic Wound Care

 $70,799 sub-award (PI, 100% IDC) 9/1/16-8/31/19

1. NIH:NINDS R21NS096571: Central nervous system tissue organogenesis via precise growth factor tethering $418,000 (PI, 90% IDC); 7/1/16-6/30/19
2. NSF: 1647555: SBIR Phase I: Tunable Oxygenating Hydrogel Dressings for Chronic Wound Care

O2 RegenTech/NIH STTR phase I, $67,800 sub award, (PI 100% IDC) 12/11/16-11/30/19

1. Conquer Chiari: Targeting Syrinx Transporters for Syringomyelia Treatment Strategies

$128,725 (PI, 100% IDC); 1/1/16-5/30/18

1. NIH:NIGMS R15GM104851: Adaptable hydrogel oxygen delivery platform for wound care

 $358,275 (PI, 100% IDC); 8/1/13-7/31/17

1. I-Corps@Ohio. OXAID-Oxygenated Hydrogel Dressing for Chronic Wound Healing

 $15,000 (PI, 100% IDC); 8/1/15-12/31/15

1. Ohio Third Frontier University Technology Validation and Start-Up Fund (TVSF), Phase-I: Oxaid Oxygenating wound dressing

 $50,000 (PI, 100% IDC) with $50,000 internal match; 7/01/14 - 6/30/15

1. UA LEAP funding: MACF Wound Healing

 $25,000 (PI, 100%); 10/01/14 - 6/30/15

1. Conquer Chiari: Transcriptional profiling and µCT assessment of an experimental syringomyelia rat model for the development of new neurorestorative treatments

 $97,651 ($67,234 first award and $30,417 from supplemental application; PM, 80% IDC); 12/01/12 - 4/30/15

1. University of Akron – Summer Research Fellowship: Electrical and Tensile Bioreactor for Extreme Neuron Growth

 $10,000 (PI, 100%); 05/15/11-05/14/12

1. NSF-BMMB and BME-1259389: 2013 Cellular and Molecular Bioengineering (CMBE) Conference, January 1-5, Kohala Coast, HI

 $10,000 (PI, 100%); 12/01/12-11/30/13

1. Austen Bioinnovation Institute in Akron (ABIA) - Technology Development Fund: O2 Releasing Hydrogels and their application in Chronic Wound Healing

 $10,485 (PI, 100%); 12/4/12-12/3/13

1. NIH:NIBIB R13 - 1R13EB016529-01: 2013 Cellular and Molecular Bioengineering (CMBE) Conference

 $10,000 (PI, 100%); 01/01/13-12/31/2013

1. UA NSF I-Corps Site

 $2,500 (PI, 100%); 3/01/14 - 8/31/14

**Teaching Experience**

**Instructor,** Stem Cell Engineering,Elective Undergraduate and Graduate Course, 3 cr, Dept. of Chemical & Biomolecular Engineering. Graduate (GRAD) 4200:696-001, Undergraduate (UG) 4200:496-001

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|  | **Enrollment** |  |  |  |
| **Fall 2013 (GRAD)** | 10 |  |  |  |
| **Fall 2013 (UG)** | 2 |  |  |  |
| **Fall 2014 (GRAD)** | 7 |  |  |  |
| **Fall 2014 (UG)** | 4 |  |  |  |
| **Fall 2015 (GRAD)** | 9 |  |  |  |
| **Fall 2015 (UG)** | 1 |  |  |  |
| **Fall 2017 (GRAD)** | 9 |  |  |  |

**Instructor,** Chemical Process Economics (4200:341), Core (Required) Undergraduate Course, 2 cr, Dept. of Chemical & Biomolecular Engineering, University of Akron.

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|  | **Enrollment** |  |  |  |
| **Fall 2010** | 42 |  |  |  |
| **Fall 2011** | 38 |  |  |  |
| **Fall 2012** | 44 |  |  |  |
| **Fall 2013** | 40 |  |  |  |
| **Fall 2014** | 46 |  |  |  |
| **Fall 2015** | 46 |  |  |  |
| **Fall 2016** | 81 |  |  |  |
| **Fall 2017** | 61 |  |  |  |
| **Fall 2018** | 47 |  |  |  |
| **Fall 2019** | 54 |  |  |  |
| **Fall 2020** | 48 |  |  |  |

**Instructor,** Advanced Transport Phenomena (4200:600), Core (required) Graduate Course, 3 cr Dept. of Chemical & Biomolecular Engineering, University of Akron.

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|  | **Enrollment** |  |  |  |
| **Spring 2010** | 21 |  |  |  |
| **Spring 2011** | 20 |  |  |  |
| **Spring 2012** | 16 |  |  |  |
| **Spring 2013** | 25 |  |  |  |
| **Spring 2014** | 25 |  |  |  |
| **Spring 2015** | 18 |  |  |  |
| **Spring 2016** | 17 |  |  |  |
| **Spring 2017** | 21 |  |  |  |
| **Spring 2018** | 14 |  |  |  |
| **Spring 2019** | 14 |  |  |  |
| **Spring 2020** | 15 |  |  |  |
| **Spring 2021** | 7 |  |  |  |

**Co-Instructor**, Project of Management and Teamwork (4200-110/210/310/410), Core Undergraduate Course, 1 cr, Dept. of Chemical & Biomolecular Engineering, University of Akron.

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|  | **Enrollment** |  |  |  |
| **Fall 2009** | 191 |  |  |  |
| **Fall 2010** | 202 |  |  |  |
| **Fall 2011 - 110** | 205 |  |  |  |
| **Fall 2011 - 210** |  |  |  |
| **Fall 2011 - 310** |  |  |  |
| **Fall 2011 - 410** |  |  |  |
| **Fall 2012 - 110** | 253 |  |  |  |
| **Fall 2012 - 210** |  |  |  |
| **Fall 2012 - 310** |  |  |  |
| **Fall 2012 - 410** |  |  |  |
| **Fall 2018 (team mentor assigned load)** | 15 |  |  |  |
| **Fall 2019 (team mentor assigned load)** | 15 |  |  |  |
| **Fall 2020 (team mentor assigned load)** | 15 |  |  |  |

**Co-Instructor,** Transport Phenomena (4200:321), Core (Required) Undergraduate Course, 3 cr, Dept. of Chemical & Biomolecular Engineering, University of Akron.

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|  | **Enrollment** |  |  |  |
| **Fall 2020** | 63 |  |  |  |

**Guest Lecturer,** Tissue Engineering, Dept. of Biomedical Engineering, University of Akron, graduate, special lectures on neural tissue engineering, ‘10 Spring and ‘11, ’12, ’13, ‘15 Fall term. Dr. Ge Zheng lead instructor.

**Guest Lecturer,** Cell Biomaterial Interactions, Dept. of Polymer Science, University of Akron, graduate, special lectures on neural ECM and lessons for regeneration, ‘12, ’14 Spring term. Drs. William Landis and Nita Sahai lead instructors and , ’19, ‘20 Spring term Nita Sahai lead instructor.

**Substitute Lecturer**, Cellular Engineering, Dept. of Bioengineering, Rice University, graduate.

**Honors Thesis Advisor,** University of Akron**:** Michael D Pienoski (CBE 2013), Natalie Jarmusik (CBE 2016), Keith Edmunds (CBE 2014), Heath Harris (CBE 2014), James Krayley (CBE 2015), Natalie Jarmusik (CBE 2015), Dakotah Cox (CBE 2017), Kaileen Shevchuk (CBE 2019), Trenton Richwine (CBE 2019), Karis Courey (CBCE 2020).

**Honors Thesis Reader,** University of Akron**:** Hannah Prince(CBE, 2011),Brian Ramunno (CBE, 2011), Michael Lembano (CBE 2011), Jessica A Slimak (CBE 2012), Jamie Whyte (CBE 2014), Masam Mousavi (CBE 2014), Zachary Richmond (CBE 2015), Lindsay Aichinger (CBE 2015), Chris Ray (2016), William Sandorf (2017). Luke Webel (CBE 2019).

**Research Advising Experience**

*Postdoctoral Fellows*

1. Asanka Wijekoon, Ph.D, postdoctoral fellow, University of Akron, 2011-2012. Pharmaceutical Scientist at ARL BioPharma Inc. (Oklahoma City, OK)

*Graduate Students*

Past

1. Aleesha M. McCormick, PhD (Graduated December 2014), Chemical and Biomolecular Engineering, University of Akron, 2010-2014. Thesis title: Development and Implementation of Multi-Cued Guidance Strategies for Axonal Regeneration. 2011 BMES travel award. 2011 Chemical and Biomolecular Engineering Graduate Research Award, 2014 ChemStress Outstanding Graduate Student award. Now Research Associate at BioMendics LLC, Rootstown, OH USA.
2. Hang Li, PhD (Graduated May 2015), Chemical and Biomolecular Engineering, University of Akron, 2009-2015. Thesis title: Neural Stem/Progenitor Cell 3-D Differentiation for Repair of Central Nervous System Injuries. 2011 BMES travel award. Podium presentation at SFB 2014. Now Tenure Track Assistant Professor Jinan University, Biomedical Engineering department, Guangzhou City.
3. Sridhar Akula, MS, Chemical and Biomolecular Engineering, University of Akron, 2015-2016. Thesis title: Fluorinated Methacrylamide Chitosan Hydrogel Improves Cellular Wound Healing Processes. Currently in Industry in California (don’t have record of company).
4. Ashley E. Mohrman Wilkinson, PhD (Graduated May 2017), Chemical and Biomolecular Engineering, University of Akron, 2010-2017. Thesis title: Regenerative Medicine Approaches to Spinal Cord Injury. 2011 BMES travel award. Navy Summer Research Fellowship 2012. Now research director at Akron Children’s Hospital, Akron, OH, USA
5. Pritam S. Patil, PhD (Graduated August 2018), Chemical and Biomolecular Engineering, University of Akron, 2013-2018. Thesis title: Fluorinated methacrylamide chitosan for oxygen delivery in wound healing and tissue engineering. NSF I-Corps trainee 2014. SFB STAR travel award 2015/ I-Corps@ Ohio EL trainee 2015. Now Licensing officer at the University of Massachusetts Medical School, MA, USA. 2019-present.
6. Natalie Fountas-Davis, MS (Graduated May 2020), Biomedical Engineering, University of Akron, 2012-2019. Thesis title: A Novel Chitosan-Based Wound Healing Hydrogel for the Enhancement of Local Oxygen Levels and for the Facilitation of Dermal Tissue Repair.
7. Trevor R. Ham, PhD (Graduated May 2019), Biomedical Engineering, University of Akron, 2013-2019. Thesis title: Covalent Growth Factor Tethering to Guide Neural Stem Cell Behavior. TERMIS 2016 Travel Award, OSU 2017 SCITP selection. Now postdoctoral fellow at Duke University, NC, USA.
8. Mahmoud Farrag, PhD (Graduated December 2019), Integrated Biosciences Program, University of Akron, 2014-2019. Thesis title: Tissue engineering and pharmacological approaches for the treatment of spinal cord injuries. Tenure Track Asst Prof, Biology, North Central State College, Mansfield, OH.
9. Hannah J. Baumann, PhD (Graduated December 2020) (Co-Advised with Dr. Leah Shriver), Chemistry, University of Akron, 2015-2020. Thesis title: Molecular investigation into spinal cord injury regeneration barriers and therapeutic strategies. Scientist at Convelo Therapeutics. Cleveland, OH.
10. Mohammad Hamrangsekachaee, PhD candidate, Biomedical Engineering, University, 2018-2021. Did not complete PhD at UA to follow spouse to another institution (Northeastern University in Boston, MA). Currently enrolled in PhD program there in Chemical Engineering.

Current

1. Andrew McClain (Completed Proposal), PhD Candidate Chemical and Biomolecular Engineering, University of Akron, 2015-present.
2. Shahrzad Fathollahipour PhD candidate, Chemical and Biomolecular Engineering, University, 2016-present.
3. Dipak Pukale, PhD candidate, Chemical and Biomolecular Engineering, University, 2017-present.
4. Mona Mansouri, PhD candidate, Chemical and Biomolecular Engineering, University, 2017-present.
5. Hannah Durr, PhD candidate, Integrated Biosciences Program, 2020-present.

*Undergraduate Students*

1. Collin Szeles, Chemical and Biomolecular Engineering, University of Akron, 2010. Engineer II at Windstream
2. Jonathan Fouts, Chemical and Biomolecular Engineering, University of Akron, 2010.
3. Elizabeth Endrizzi, Biomedical Engineering, University of Akron, 2010-2012. Clinical Research Coordinator at the Cleveland Clinic.
4. Liza Kobelt, Biology, University of Akron, 2010-2013. Second place paper presentation Regional AIChE 2012. Selected for 2012 BMES podium presentation and travel award. First author paper in ABME and second author on a JBMR-A paper. Graduate student at the University of Washington, Seattle.
5. Alexandra Antonas, Biomedical Engineering, Ohio State University, Summer Internship 2011.
6. Natalie A Jarmusik, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2012-2014. Second author on JoVE paper, pursuing PhD in Biomedical Sciences at Case Western Reserve University.
7. Tyler Johnson, Electrical Engineering, University of Akron, 2012-2013. MS BioE, University of Illinois Chicago. PhD BME, University of Michigan. Now researcher at Cleveland Clinic (2020).
8. Mike D Pienoski, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2012-2013. Process Engineer with Lubrizol.
9. Heath Harris, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2012-2014. Material Scientist at Veyance Technologies, Inc.
10. Stephanie Haft, Biology, Claremont McKenna College, Summer Internship 2013. Now graduate student UC Berkeley Clinical Science.
11. Andrew Koening, Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2013-2015. Second author on published paper (Biomaterials). Product Engineer, PCC Airfoils.
12. Keith Edmunds, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2013-2014. Process Safety Engineer at ExxonMobil.
13. Ivy Brosch, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2013-present.
14. Nicholas Neill, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2013-2014. Process Enigeering, OMNOVA Solutions.
15. David Jakubiec, Undergraduate Chemical and Biomolecular Engineering, University of Akron, 2013-2014.
16. James Krayley, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2014-2015
17. Jeffery Zimmerman, Honors Undergraduate, Biomedical Engineering, University of Akron, 2014-2016.
18. Dakotah Cox, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2014-2017. Development Engineering Technician, First Solar.
19. Clark Wang, Biochemistry Undergraduate, University of California at San Diego, Summer Volunteer 2015.
20. Andrew Soltiz, Honors Undergraduate, Biomedical Engineering, University of Akron, 2016-2017. Now PhD student at Ohio State.
21. Jacob Ress, Honors Undergraduate, Biomedical Engineering, University of Akron, 2016-2018. Now PhD student at University of Akron.
22. Rachel Grimm, Honors Undergraduate, Biomedical Engineering, University of Akron, 2015-2017.
23. Kaileen Shevchuk, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2015-2019. Thesis: The production and characterization of chitosan based microgels using a novel microfluidic device to promote cell survival.
24. Karis Courey. Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2016-2020.
25. Colin Wilson, Honors Undergraduate, Biomedical Engineering, University of Akron, 2015-2016. Now PHD student at Cleveland State.
26. Tim Cuckow, Honors, Undergraduate, Biomedical Engineering, University of Akron, 2016.
27. Patricia Betonio, Undergraduate, Nursing, University of Akron, 2016- 2019. Registered Nurse at University Hospitals.
28. Trenton Richwine, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2016-2019. Thesis: Synthesis of Drug Encapsulated Chitosan-Heparin Based Nanoparticles and Release Study. Research and Development Engineer, Concrete Sealants, Inc.
29. Eleanor Plaster, Buckingham Scholar, Honors Undergraduate, Chemical and Biomolecular Engineering, University of Akron, 2018-2019.
30. Ashwin Amar Ghatpande, Biology, University of Akron, 2018-2020.
31. Zoltan Namenyi, Chemistry, University of Akron, 2018-2020.
32. Megan Swope, Chemical and Biomolecular Engineering, University of Akron, 2018-2019.
33. Corrie McElhaney, Biomedical Engineering, University of Akron, 2020-present.
34. Megan Reynold, Biology, University of Akron, 2020-2021.
35. Samantha Beemer, Biology, University of Akron, 2020-present.
36. Siddhartha, Aryal, Chemistry, University of Akron, 2020-present.
37. Allen, Delora Grace, Chemical and Biomolecular Engineering, University of Akron, 2020-present.

*High School Students*

1. Marissa Tomin, St, Vincent and St. Mary High School, Akron, OH. Superior rating at the 2011 Regional Science Fair, award from the Yale Science and Engineering Association for the Most Outstanding Eleventh Grade Exhibit in Computer Science, Engineering, Physics, or Chemistry. Excellent at Ohio State Science Fair and part of Harold C. Shaw Excellent School Award. 2011-2013. Undergraduate student at the University of Akron.
2. Sara C. Vretas, Sandy Valley High School, Magnolia, OH. Summer intern in lab for 7 weeks, 2014.
3. Jessica Herstine, Sandy Valley High School, Magnolia, OH. Summer intern in lab for 7 weeks, 2014.
4. Gabrielle Lathrop, St, Vincent and St. Mary High School, Akron, OH.

*High School Teachers*

1. Jeannette Jernigan, Sandy Valley High School, Magnolia, OH. Spent summer in lab and as part of NSF-REU program. Developed classroom lessons on ‘Polymers and Cells.’ 2012, 2013.
2. Danielle Donaldson Field High School, Mogadore, OH, 2014.Spent summer in lab and as part of NSF-REU program.

**Graduate Committee Member**

*Graduated*

1. Jia Fang (CBE, MS), Bi-min Zhang Newby (Advisor), Experimental Evidence of Fracture-Induced Formation of Ordered Strip Structures, Aug 2011.
2. Tritti Siengchum (CBE, PhD), Steven Chuang (Advisor),Study of Direct Utilization of Solid Carbon and CH4/CO2 Reforming on Solid Oxide Fuel Cell, Dec 2012.
3. Patrick B. Patterson (BME, MS), Ge Zhang (Advisor), Creation of a Mechanical Gradient Peg-Collagen Scaffold by Photomasking Techniques Oct 2013.
4. Yenni Marcela Castaño Gil (Polymer Science (PS), PhD), Judit E. Puskas (Advisor) and Matthew L. Becker (Advisor), Green Polymer Chemistry: The Role of Candida Antarctica Lipase B in Polymer Functionalization, May 2014.
5. Alejandra Alvarez Albarran (PS, PhD), Judit E. Puskas (Advisor), Modular Surface Functionalization of Polyisobutylene-based Biomaterials, August 2014.
6. Hokyung Song (CBE, PhD), Bi-min Zhang Newby (Advisor), Fabrication of Injectable Cell Carriers Based on Polymer Thin Film Dewetting, December 2014.
7. Shuangyi Sun (PS, PhD), Abraham Joy (Advisor), Alkoxyphenacyl Polymers: A Novel Photodegradable Polymer Platform, Feb 2015.
8. Nicholas Callow (CBE, PhD), Lu-Kwang Ju (Advisor), Exploring The Controlled Pellet Formation of Trichoderma reesei RUT-C30 for Improved Fermentation, May 2015.
9. Phillip McClendon (PS, PhD), William Landis (Advisor), Electrospun PLLA Nanofiber Coating of Scaffolds for Applications in Bone Tissue Engineering, July 2015.
10. Gina M Policastro (PS, PhD), Matthew L. Becker (Advisor), Osteogenic-Peptide Functionalized Polymeric Materials for Bone Regeneration Applications. April 2015.
11. John Swanson (PS, PhD), Abraham Joy (Advisor), A New Class of Biodegradable, Coacervate-Forming, Thermoresponsive Polyesters Based on N-Substituted Diols. April 2015.
12. Abdullah Al Loman (CBE, PhD), Lu-Kwang Ju (Advisor), Enzyme Based Processing of Soybean Meal: Production of Enriched Protein Product and Utilization of Carbohydrate as Fermentation Feedstock for Arabitol Production, April 2016.
13. Ernest Duah (Chem, PhD), Sailaja Paruchuri (Advisor), Cysteinyl Leukotrienes and Their Receptors: Potential Roles in Endothelial Function and Cancer, July 2016.
14. Gustavo A Guzman Cardozo (Polymer Engineering (PE), PhD), Mukerrem Cakmak (Advisor), Bimodal Amphiphilic Polymer Conetworks: Structure-Property Characterization, Processing and Applications, August 2016.
15. Yalong Li (CBE, PhD), George Chase (Advisor), Solutions of Potential Fields Using Flexible Finite Element Methods with Applications in Flow through Porous Media and Electrospinning, August 2017.
16. Jessica Stukel (BME, PhD), Rebecca Willits (Advisor), Engineering Tumor Models Using Aqueous Biphasic 3D Culture Microtechnology, August 2017.
17. Stephanie Lemmo Ham (BME PhD), Hossein Tavana (Advisor), Engineering Tumor Models Using Aqueous Biphasic 3D Culture Microtechnology, August 2017.
18. Masoume Davoudi (CBE, PhD), George Chase (Advisor), Aerosol Droplet Migration in Fibrous Media, October 2017.
19. Jon Chen (IB, PhD), Donald Visco, Jr. (Advisor), Data Mining/Machine Learning Techniques for Drug Discovery: Computational and Experimental Pipeline Development, May 2018.
20. Chathura Abeywickrama, (Chem, PhD), Yi Pang (Advisor), Synthesis of novel organic fluorescent small molecules for ion detection and cellular imaging, August 2018.
21. Suo (Daniel) Xiao (CBE, PhD), Lu-Kwang Ju (Advisor), Phagotrophic Algae Based Approaches for Advanced Wastewater Treatment, December 2018.
22. Ramila Joshi (BME, PhD), Hossein Tavana (Advisor), Micro-engineering of embryonic stem cells niche to regulate neural cell differentiation, December 2018.
23. Cecília Margarida Mendes Motta (PS, PhD), Matthew L. Becker (Advisor), Tuning surface properties to optimize cell behavior for tissue engineering applications, May 2019.
24. Keti Gitit Bertman (Chem, PhD), Yi Pang (Advisor), Synthesis of organic small-molecule fluorescent for probes for chemical and biological applications, December 2019.
25. Pradip Shahi Thakuri, (BME, PhD), Hossein Tavana (Advisor), Modeling anticancer drug resistance using tumor spheroids, December 2019.
26. Shaun Christie (Chem, PhD), ELUCIDATION OF MEMBRANE PROTEIN INTERACTIONS UNDER NATIVE AND LIGAND STIMULATED CONDITIONS USING FLUORESCENCE CORRELATION SPECTROSCOPY, August 2020.
27. Brian Balog (IB, PhD), BRAIN DERIVED NEUROTROPHIC FACTORS ROLE IN RECOVERY AND TREATMENT AFTER SIMULATED CHILDBIRTH INJURY MODELS, August 2020.
28. Maggie Eppelheimer (BME, PhD) IDENTIFICATION OF CHIARI MALFORMATION TYPE I BIOMECHANICS: A MULTI-DISCIPLINARY APPROACH TO DETERMINE DIAGNOSTIC AND TREATMENT CRITERIA, August 2020
29. Megan Cruz (PS, PhD), Abraham Joy (Advisor), COACERVATE-FORMING THERMORESPONSIVE POLYESTERS AS PROTEIN DELIVERY PLATFORMS. November 2020.
30. Seyedeh Neda Mehdizadeh (CBCE, PhD), George Chase (Advisor), INVESTIGATION OF THE DROP MOTION AND MODELING OF THE SATURATION WITHIN DEPTH COALESCING FILTER. November 2020.
31. Sunil Singh (BME, PhD), Hossein Tavana (Advisor), ENGINEERED ORGANOTYPIC BREAST TUMOR MODEL FOR MECHANISTIC STUDIES OF TUMOR-STROMAL INTERACTIONS AND DRUG DISCOVERY, January 2021.
32. Nicholas Nun (PS, PhD), Abraham Joy (Advisor), IMPROVING SKIN WOUND HEALING USING FUNCTIONAL ELECTROSPUN WOUND DRESSINGS AND 3D PRINTED TISSUE ENGINEERING CONSTRUCTS. November 2020.
33. Diana Philip (BME, PhD), Rebecca Willits (Advisor), THE INFLUENCE OF SYNTHETIC MICROENVIRONMENTS IN DETERMINING STEM CELL FATE. May 2021.
34. Sabita Pokhre (Chem, PhD), Sailaja Paruchuri (Advisor), ROLE OF CYSTEINYL LEUKOTRIENES IN THE REGULATION OF MACROPHAGE FUNCTION, June 2021.

*In progress*

1. Napaporn Vongpanish (CBE, PhD), Lu-Kwang Ju (Advisor)
2. Derek Long (PS, PhD), Matthew L. Becker (Advisor)
3. Kaushik Mishra (PS, PhD) Abraham Joy (Advisor)
4. Mangaldeep Kundu (PS, PhD) Abraham Joy (Advisor)
5. Ellie (Elham) Malekzadeh, (CBCE, PhD), Bimin Newby (Advisor)

**Internal Service**

* University of Akron, Chemical and Biomolecular Engineering, Awards Committee Chair, 2009-present.
* University of Akron, Chemical and Biomolecular Engineering, Undergraduate Student Advisor, 2009-present.
* University of Akron, Chemical and Biomolecular Engineering, Merit Raise Committee Member, 2010-present.
* University of Akron, Chemical and Biomolecular Engineering, International Undergraduate Student (new and transfer) Advisor, 2011-present.
* University of Akron, Chemical and Biomolecular Engineering, Course Program Committee Member, 2014-present.
* University of Akron, Chemical and Biomolecular Engineering, Hiring Committee Member for new CBE Staff position, Fall 2014- Winter 2015
* University of Akron, Institutional Animal Care and Use Committee (IACUC), Scientist Member, January 2014 to December 2019.
* University of Akron, BME tenure track hiring committee, Fall 2017- Winter 2018.
* College of Engineering Interim Dean Search, Fall 2018.
* University of Akron, Chemical and Biomolecular Engineering, Faculty Mentor to Davis Bastidas, Spring 2019-present.
* Graduate Council Membership Committee, appointed member, 2019-2022.
* Graduate Council Executive Committee, elected member for Engineering, 3 year term, starting Fall 2020.
* University of Akron, BME tenure track hiring committee (2 postings), Spring 2020-Summer 2020. Cancelled due to pandemic and budget cuts – got to phone interview stage.
* Graduate Council Membership Committee, Chair, 2020/21.
* College Reorg Committee, appointed member, 2020/21.

**External Service**

* Invited Grant Reviewer, NIH NIGMS MIRA New Investigator Panel. March 2021.
* Invited Grant Reviewer, The Ohio Higher Education Research Incentive Spinal Cord Grant Program Panel. April 2020.
* Invited Grant Reviewer, NIH member conflict panel. March 2020.
* Invited Grant Reviewer, NIH BNVT, Feb 2017, June 2017, Feb 2018, Oct 2018, June 2019.
* Invited Grant Reviewer, NIH NIDA Special FOA for brain organoids, Feb 2018.
* Invited Grant Reviewer, DoD DMRP, March 2028.
* CMBE abstract reviewer, Fall 2017, Fall 2020.
* Panel Chair, DoD CDMRP, February 2017. 40 grant proposals
* Invited Grant Reviewer, NSF Brain Initiative EpSCoR, April 2016.
* Invited Grant Reviewer, DoD CDMRP, Feb 2016, Feb 2020.
* Invited Grant Reviewer, NSF Biomechanics and Mechanobiology (CMMI), January 2016.
* Invited Grant Reviewer (*ad hoc*), NIH ETTN(10) (Clinical Neurophysiology, Devices, Neuroprosthetics and Biosensors Small Business SEP), March 2015, March 2016, November 2019.
* Invited Grant Reviewer, Texas Brain Initiative, May 2015.
* Invited Grant Reviewer, NSF Biomechanics and Mechanobiology (CMMI), January 2014.
* Invited Grant Reviewer (*ad hoc*), NIH NDPR (Neural Differentiation, Plasticity, Regeneration and Rhythmicity) study section. Mail-in, June 2014.
* Invited Grant Reviewer, Veterans Administration, SPiRE grants, 2013, 2014, 2015. Merit Panelist (RRD0 – Regenerative Medicine) 8/2014, 2/2015.
* Invited Grant Reviewer, Texas Brain Initiative, June 2015.
* Academic Editor and Board Member for *PLoS ONE,* 2010-present. I have handled >50 papers so far.
* Journal reviewer of many papers from: *Acta Biomaterialia, Biomaterials, Nature Scientific Reports, ACS Macro Letters, ACS Applied Bio Materials, ACS Applied Materials & Interfaces, ACS Biomacromolecules, ACS Biomaterials, ACS Bioconjugate Chemistry, ACS Chemical Neuroscience Advanced Materials, Advanced Functional Materials, Advances in Wound Care, ACS Nano letters, Advanced Healthcare Materials, Annals of Biomedical Engineering, J. Biomechanics, J. Colloid and Interface Science, Biofabrication, Biomedical Materials, Biomaterials Science, Biomedical Materials, Biotechnology Letters, Clinical Orthopaedics and Related Research, Experimental Biology and Medicine, Future Medicinal Chemistry, J. of Biomedical Materials Research Part A, , Biochemical Engineering J., Stem Cells and Development, J. Materials Chemistry B, J. Applied Polymer Science, J. Bioactive and Compatible Polymers, Nanomaterials.*
* BMES conference abstract reviewer, 2011, 2013, 2014, 2015, 2017, 2018, 2019, 2020.
* Co-chair 2013 Cellular and Molecular Bioengineering (CMBE)-BMES Cellular and Molecular Bioengineering Annual Conference. Personally secured NIH and NSF grant funding totaling $20,000 for the conference. This conference fulfilled an exciting objective and comprehensive theme of delivering the latest findings from frontier research related to ‘Gradient, Interfacial and Spatiotemporal Control of Cells and Tissues’. The conference organizers were Drs. Nic Leipzig (PI), Michael Detamore (senior personnel), and Christopher Chen (senior personnel). This conference integrated both engineers and biologists to encourage sharing of ideas toward common goals. The choice of theme was meant to address the key problem of how cells are spatiotemporally instructed to form tissues. This problem cannot be solved by traditional strategies alone, and the answers will help to shape the future of regenerative medicine. This conference was the first time that this conference was held as the primary meeting for the CMBE special interest group of BMES and turned out to be the organization’s biggest conference ever (this was the 31st meeting). Overall, we had over 120 attendees from the USA, Canada, China, Japan, Korea, New Zealand, Singapore Taiwan, and United Kingdom. This figure included over 50 students and fellows that either were selected to present their abstract as a presentation in the main session or a poster in one of our two poster sessions. The conference included several stimulating talks including those from our three keynote speakers Cheng-Ming Chuong (University of Southern California), Michael P. Sheetz (National University of Singapore and Columbia University) and David M. Gardiner (University of California Irvine).
* Board member, Cellular and Molecular Bioengineering, 2013-2015.
* Board Member, Emerging Leaders Board for Akron Children’s Hospital, 2012-2017.
* STEM Speed Mentor, 10/3/2015 Hudson High School 8:30am-12:00pm.
* Assistant Editor and Board Member CTO.

**Professional Affiliations**

Biomedical Engineering Society (BMES) and the Cellular and Molecular Bioengineering (CMBE) SIG

The American Institute of Chemical Engineers (AIChE)

National Center for Regenerative Medicine (NCRM)

Stem Cell Network (SCN)

Society for Biomaterials (SFB)

Tissue Engineering and Regenerative Medicine International Society (TERMIS)