

ANGELA K. PANNIER, PH.D.

Swarts Family Chair in Biological Systems Engineering
Professor of Biological Systems Engineering and Biomedical Engineering
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1. EDUCATION AND EMPLOYMENT

1.1 Education History

- Ph.D., Biological Sciences Jan 2003 – Jun 2007
Northwestern University, Evanston, IL
- M.S., Biological Systems Engineering May 2001 – Dec 2002
University of Nebraska, Lincoln, NE (UNL)
- B.S., Biological Systems Engineering Aug 1997 – May 2001
Graduation with Honors and Highest Distinction
University of Nebraska, Lincoln, NE (UNL)

1.2 Employment History

- Swarts Family Chair in Biological Systems Engineering July 2021 – Present
Institute of Agriculture and Natural Resources, UNL
- Maxcy Professor of Agriculture and Natural Resources Jan 2020 – July 2021
Institute of Agriculture and Natural Resources, UNL
- Professor of Biological Systems Engineering and July 2018 – Present
Biomedical Engineering, UNL
- Visiting Scholar, Leibniz-Institut für Polymerforschung, May 2017 – July 2017
Dresden e. V., Germany
- College of Engineering William E. Brooks Engineering Sept 2014 – Aug 2018
Leadership Fellow, UNL
- Associate Professor (by Courtesy), Department of Surgery Aug 2013 – Present
and Mary and Dick Holland Regenerative Medicine Program,
University of Nebraska Medical Center, Omaha, NE
- Associate Professor of Biological Systems Engineering and July 2013– June 2018
Biomedical Engineer, UNL
- Assistant Professor of Biological Systems Engineering and Oct 2007 – Jun 2013
Biomedical Engineer, UNL
- Graduate Research Assistant, Departments of Chemical and Jan 2003 – Jun 2007
Biological Engineering and Interdepartmental Biological Sciences,
Northwestern University, Evanston, IL
- Graduate Research Assistant, Department of Biological Jan 2001 – Dec 2002
Systems Engineering, UNL

2. AWARDS

2.1 National and International Awards and Recognition

- 2022 Fellow, American Institute for Medical and Biological Engineering (AIMBE)
- 2020 Fellow, Biomedical Engineering Society (BMES)
- Big Ten Academic Alliance Academic Leadership Program Fellow (2019-2020)

- Presidential Early Career Award for Scientist and Engineers (awarded in 2019 for 2017)
- National Institutes of Health Director's New Innovator Award (2017)
- National Science Foundation CAREER Award (2013)
- American Heart Association Scientist Development Grant (2010)
- *Acta Biomaterialia* Author Award (2005)
- National Institutes of Health Predoctoral Training Grant Fellow (2004)
- National Science Foundation Graduate Research Fellow (2001)
- Barry M. Goldwater Scholar (2000)

2.2 Regional and Local Awards and Recognition

- 2020 UNL College of Engineering Faculty Research and Creative Activity Award
- 2020 UNL Gamma Sigma Delta Outstanding Researcher Award
- 2019-2020 Co-Chair of UNL University-Wide N2025 Strategic Plan
- 2019 UNL College of Engineering Excellence in Research Award
- 2019 UNL College Distinguished Teaching Award
- 2019 College of Engineering Holling Family Master Teacher Award
- 2018 UNL Parents Association Teaching Award
- 2017 UNL Outstanding Undergraduate Research Mentor Award
- 2017 UNL College of Engineering Tau Beta Pi Distinguished Teaching Award
- 2016 UNL Darrell W. Nelson Excellence in Graduate Student Advising Award
- 2016 UNL College of Agriculture and Natural Resources Fellow
- UNL College of Engineering William E. Brooks Leadership Fellow (2014-2018)
- Mortar Board Professor of the Month (February 2013)
- 2012 IANR Dinsdale Family Faculty Award
- 2012 UNL Advance Ambassador
- Gamma Sigma Delta Membership (2011)
- 2010 Honorary Member of Black Masque Chapter of Mortar Board (Faculty Inductee)
- 2008 Nebraska EPSCoR First Award
- Cooper/Sharpless Graduate Research Fellow (UNL, 2001)
- University of Nebraska Reichenbach Fellow (2001)

3. PUBLICATIONS, PRESENTATIONS, AND PATENTS

3.1 Peer Reviewed Journal Publications (H-Index: 23)

1. Walsh SC₃^{*}, Miles JR, Keel BN, Rempel LA, Wright-Johnson EC, Lindholm-Perry AK, Oliver WT, and **Pannier AK**. 2022. Global analysis of differential gene expression within the porcine conceptus transcriptome as it transitions through spherical, ovoid, and tubular morphologies during the initiation of elongation (in press at *Mol. Reprod. Develop.*).
2. Kozisek T₃, Hamann A₃, Samuelson L₃, Fudolig M, **Pannier AK**. 2021. Comparison of Promoter, DNA Vector, and Cationic Carrier for Efficient Transfection of Human Mesenchymal Stem Cells from Multiple Donors and Tissue Sources, *Molecular Therapy-Nucleic Acids*. 26:81-93.
3. Lampe AT₃, Farris EJ₃, Brown DM, **Pannier AK**. 2021. High- and low-molecular-weight chitosan act as adjuvants during single-dose influenza A virus protein vaccination through distinct mechanisms. *Biotechnology and Bioengineering*. 118 (3): 1224-1243.
4. Hamann A₃, Kozisek T₃, Broad K₁, **Pannier AK**. 2020. Glucocorticoid Priming of Nonviral Gene Delivery to Human Mesenchymal Stem Cells Increases Transfection by Reducing Induced Stresses. *Molecular Therapy – Methods and Clinical Development*. 18:713-722.
5. Lampe AT₃, Lal Puniya B, **Pannier AK**, Helikar T, Brown DM 2020. Combined TLR4 and TLR9 agonists induce distinct phenotypic changes in innate immunity in vitro and in vivo. *Cellular*

*Subscripts indicate student and co-authors under my supervision:

1: Undergraduate student; 2: Master's student; 3: Ph.D. student; 4: Postdoctoral researcher

- Immunology*. 355:104149.
6. Kozisek T₃, Hamann A₃, Nguyen A₃, Miller M₁, Plautz S, **Pannier AK**. 2020. High-Throughput Screening of Clinically Approved Drugs that Primer Nonviral Gene Delivery to Human Mesenchymal Stem Cells. *Journal of Biological Engineering* 14:16.
 7. Hamann A₃, Thomas AK, Kozisek T₃, Farris E₃, Lück S, Zhang Y, **Pannier AK**. 2020. Screening a chemically defined extracellular matrix mimetic substrate library to identify substrates that enhance substrate-mediated transfection. *Experimental Biology and Medicine*. 245(7):606-619.
 8. Walsh SC₃, Miles JR, Yao L, Broeckling CD, Rempel LA, Wright-Johnson EC, **Pannier AK**. 2020. Metabolic compounds within the porcine uterine environment are unique to type of conceptus present during the early stages of blastocyst elongation. *Mol. Reprod. Develop.* 87(1):174-190.
 9. Hamann A₃, Nguyen A₃, **Pannier AK**. 2019. Nucleic acid delivery to mesenchymal stem cells: a review of nonviral delivery methods and applications. *J Biol. Engineering*. 13:7.
 10. Mantz A₃, Rosenthal A, Farris E₃, Kozisek T₃, Bittrich E, Nazari S, Schubert E, Schubert M, Stamm M, Uhlmann P, **Pannier AK**. 2019. Free polyethylenimine enhances substrate-mediated gene delivery on titanium substrates modified with RGD-functionalized poly(acrylic acid) brushes. *Frontiers in Chemistry: Poly. Chemistry*. 7:51.
 11. Mantz A₃ and **Pannier AK**. 2019. Biomaterial substrate modifications that influence cell-material interactions to prime cellular responses to nonviral gene delivery. *Experimental Biology and Medicine*. 244(2):100-113.
 12. Hamann A₃, Broad K₁, Nguyen A₃, **Pannier AK**. 2019. Mechanisms of unprimed and dexamethasone-primed nonviral gene delivery to human mesenchymal stem cells. *Biotechnology and Bioengineering*. 116(2):427-443.
 13. Farris E₃, Heck K₃, Lampe AT₃, Brown DM, Ramer-Tait A, and **Pannier AK**. 2018. Oral non-viral gene delivery for applications in DNA vaccination and gene therapy. *Current Opinion in Biomedical Engineering*. 7:51-57.
 14. Iverson NM, Keshwani JR, **Pannier AK**, Plautz SA. 2018. Engineering Nanoparticles for the Body. *Science Scope*. 41 (7): 1-10.
 15. Erickson AG, Laughlin TD₂, Romereim SM, Sargus-Patino CN₂, **Pannier AK**, Dudley AT. 2018. A tunable, three-dimensional in vitro culture model of growth plate cartilage using alginate hydrogel scaffolds. *Tissue Engineering, Part A*. 24(1-2): 94-105.
 16. Rosenthal A, Mantz A₃, Bittrich E, Schubert E, Schubert M, Stamm M, **Pannier AK**, Uhlmann P. 2018. Biofunctionalization of Titanium Substrates Using Nanoscale Polymer Brushes with Cell Adhesion Peptides. *J Physical Chemistry: B*. 122 (25): 6543-6550.
 17. Laughlin TA₂, Miles JR, Wright-Johnson EC, Rempel LA, Lents CA, and **Pannier AK**. 2017. Development of Pre-implantation Porcine Embryos cultured within Alginate Hydrogel Systems either supplemented with Secreted Phosphoprotein 1 or conjugated with Arg-Gly-Asp Peptide. *Reproduction, Fertility and Development*. 29(12):2345-2356.
 18. Miles JR, Laughlin T₂, Sargus-Patino C₂, **Pannier AK**. 2017. In Vitro Porcine Blastocyst Development in Three-Dimensional Hydrogels. *Molecular Reprod. Development*. 84(9):775-787.
 19. Farris E₃, Ramer-Tait A, Brown DM, **Pannier AK**. 2017. Chitosan-Zein Nano-in-Microparticles Capable of Mediating In Vivo Transgene Expression Following Oral Delivery. *Journal of Controlled Release*. 249:150-161.
 20. Peev D, Hofmann T, Kananizedeh N, Beeram S, Rodriguez E, Wimer S, Rodenhausen KB, Herzinger CM, Kasputis T₄, Pfaunmiller E, Nguyen A₃, Korlacki R, **Pannier AK**, Li Y, Schubert E, Hage D, and Schubert M. 2016. Anisotropic Contrast Optical Microscope. *Review of Scientific Instruments*. 87:113701.
 21. Farris E₃, Brown D, Ramer-Tait A, **Pannier AK**. 2016. Micro and nanoparticles for DNA vaccine delivery. *Experimental Biology and Medicine*. 241(9):919-29.
 22. Kelly AM₂, Plautz SA, Zempleni J, **Pannier AK**. 2016. Glucocorticoid cell priming enhances transfection outcomes in adult mesenchymal stem cells. *Molecular Therapy*. 24(2):331-41.
 23. Nguyen A₂, Beyersdorf J₁, Riethoven JJ, **Pannier AK**. 2016. High-Throughput Screening of

- Clinically Approved Drugs that Prime Polyethylenimine Transfection Reveals Modulation of Mitochondria Dysfunction Response Improves Gene Transfer Efficiencies. *Bioengineering & Translational Medicine*. 1(2):123-135.
24. Martin TM₃, Wysocki BJ, Wysocki TA, **Pannier AK**. 2015. Identifying intracellular pDNA losses from a model of nonviral gene delivery. *IEEE Trans. NanoBiosci*. 14(4): 455-464.
 25. Kasputis T₃, Pieper A₁, Rodenhausen KB, Schmidt D, Sekora D, Rice C, Franke-Schubert E, Schubert M, **Pannier AK**. 2015. Use of precisely-sculptured thin film (STF) substrates with general ellipsometry to determine spatial distribution of adsorbed fibronectin to nanostructured columnar topographies and effect on cell adhesion. *Acta Biomaterialia*. 18:88-99.
 26. Martin TM₃, Plautz SA, **Pannier AK**. 2015. Temporal endogenous gene expression profiles in response to lipid-mediated transfection. *J. Gene Medicine*. 17(1-2): 14-32.
 27. Martin TM₃, Plautz SA, **Pannier AK**. 2015. Temporal endogenous gene expression profiles in response to polymer-mediated transfection and profile comparison to lipid-mediated transfection. *J. Gene Medicine*. 17(1-2): 33-53.
 28. Wysocki BJ, Wysocki TA, Martin TM₃ and **Pannier AK**. 2014. Simulation supported estimation of end-to-end transmission parameters in non-viral gene delivery. *IEEE International Conference on Communications*. 4179 – 4183.
 29. Koenig M, Kasputis T₃, Schmidt D, Rodenhausen KB, Eichhorn KJ, **Pannier AK**, Schubert M, Stamm M, Uhlmann P. 2014. Combined QCM-D/GE as a tool to characterize stimuli-responsive swelling of and protein adsorption on polymer brushes grafted onto 3D-nanostructures. *Analytical and Bioanalytical Chemistry*. 406:7233-42.
 30. Sargus-Patino CN₂, Wright EC, Plautz SA, Miles JR, Vallet JL, and **Pannier AK**. 2014. In vitro development of preimplantation porcine embryos using alginate hydrogels as a three-dimensional extracellular matrix. *Reproduction, Fertility and Development*. 26(7):943-53.
 31. Kasputis T₃, Pieper A₁, Schubert M and **Pannier AK**. 2014. Dynamic Analysis of DNA Nanoparticle Immobilization to Model Biomaterial Substrates using Combinatorial Spectroscopic Ellipsometry and Quartz Crystal Microbalance with Dissipation. *Thin Solid Films: ICSE-VI Proceedings*. 571(3):637-643.
 32. Martin TM₃, Wysocki BJ, Beyersdorf JP₁, Wysocki TA, **Pannier AK**. 2014. Integrating Mitosis, Toxicity, and Transgene Expression in a Telecommunications Packet-Switched Network Model of Lipoplex-Mediated Gene Delivery. *Biotechnology and Bioengineering* Aug;111(8):1659-71.
 33. Kasputis T₃, Koenig M, Schmidt D, Sekora D, Rodenhausen KB, Eichhorn KJ, Uhlmann P, Schubert E, **Pannier AK**, Schubert M, Stamm M. 2013. Slanted columnar thin films prepared by glancing angle deposition functionalized with polyacrylic acid Guiselin polymer brushes. *Journal of Physical Chemistry, Part C*. 117(27):13971-13980.
 34. Martin TM₃, Plautz SA and **Pannier AK**. 2013. Network analysis of endogenous gene expression profiles after polyethylenimine-mediated DNA delivery. *J Gene Medicine*. 15(3-4):142-154.
 35. Wysocki BJ, Martin TM₃, Wysocki TA, and **Pannier AK**. 2013. Modeling nonviral gene delivery as a macro-to-nano communication system. *Nano Communication Networks*. 4(1):14-22.
 36. Kasputis T₃ and **Pannier AK**. 2012. The role of surface chemistry-induced cell characteristics on nonviral gene delivery. *Journal of Biological Engineering*. Sep 11;6(1):17
 37. Regier MC₂, Taylor JD₂, Borczyk T₁, Yang Y, **Pannier AK**. 2012. Fabrication and characterization of DNA-loaded zein nanospheres. *Journal of Nanobiotechnology*. Dec 2;10:44.
 38. Rodenhausen KB, Schmidt D, Kasputis T₃, **Pannier AK**, Schubert E, and Schubert M. 2012. Generalized ellipsometry in-situ quantification of organic adsorbate attachment within slanted columnar thin films. *Optics Express*. 20(5):5419-28.
 39. Othman SF, Curtis ET, Plautz SA, **Pannier AK**, Butler SD, Xu H. 2012. MR Elastography monitoring of tissue engineered constructs. *NMR in Biomedicine*. 25(3):452-63.
 40. Sharp AT, **Pannier AK**, Wysocki BJ, Wysocki TA. 2012. A novel telecommunications-based approach to HIV modeling and simulation. *Nano Communication Networks*. 3(2):129-137.
 41. Plautz SA, Boanca G, Riethoven J-JM, **Pannier AK**. 2011. Microarray Analysis of Gene

- Expression Profiles in Cells Transfected with Nonviral Vectors. *Mol. Therapy*. 19(12):2144-51.
42. Rodenhausen KB, Kasputis T₃, **Pannier AK**, Gerasimov JY, Lai RY, Solinsky M, Tiwald TE, Wang H, Sarkar A, Hofmann T, Ianno N, and Schubert M. 2011. Combined optical and acoustical method for determination of thickness and porosity of transparent organic layers below the ultrathin 1m limit. *Review of Scientific Instruments*. Oct; 82(10):103111.
 43. Rodenhausen KB, Duensing BA₂, Kasputis T₃, **Pannier AK**, Hofmann T, Schubert M, Tiwald TE, Solinsky M, and Wagner M. 2011. *In-situ* monitoring alkanethiol self-assembled monolayer chemisorption with combined spectroscopic ellipsometry and quartz crystal microbalance techniques. *Thin Solid Films*. 519(9): 2817-2820.
 44. Singh D₂, **Pannier AK**, Zempleni J. 2011. Identification of holocarboxylase synthetase chromatin binding sites in human mammary cell lines using the DNA adenine methyltransferase identification technology. *Analytical Biochemistry*. 413(1):55-9.
 45. Bellis AD, Bernabé BP, Weiss MS, Yarrington ME, Barbolina MV, **Pannier AK**, Jeruss JS, Broadbelt LJ, Shea LD. 2011. Cellular arrays for large-scale analysis of transcription factor activity. *Biotechnology and Bioengineering*. 108(2):395-403.
 46. **Pannier AK**, Wieland JA, Shea LD. 2008. Surface polyethylene glycol enhances substrate-mediated gene delivery by nonspecifically immobilized complexes. *Acta Biomaterialia*. 4:26-39.
 47. **Pannier AK**, Ariazi EA, Bellis AD, Bengali Z, Jordan VC, Shea LD. 2007. Bioluminescence imaging for assessment and normalization in transfected cell arrays. *Biotechnology and Bioengineering*. 98:486-97.
 48. **Pannier AK**, Anderson BC, Shea LD. 2005. Substrate-mediated delivery from self-assembled monolayers: Effect of surface ionization, hydrophilicity, and patterning. *Acta Biomaterialia*. 1:511-522.
 49. Bengali Z, **Pannier AK**, Segura T, Anderson BC, Jang JH, Mustoe TA, Shea LD. 2005. Gene delivery through cell culture substrate adsorbed DNA complexes. *Biotechnology and Bioengineering*. May 5; 90(3):290-302.
 50. **Pannier AK**, Shea LD. 2004. Controlled release systems for DNA delivery. *Molecular Therapy*. 10:19-26.
 51. **Pannier AK**, Arora V, Iversen PL, Brand. 2004. Transdermal delivery of phosphorodiamidate Morpholino oligomers across hairless mouse skin. *Inter. Journal of Pharmaceutics*. 275:217-226.
 52. **Pannier AK**, Brand, RM, Jones DD. 2003. Fuzzy modeling of skin permeability coefficients. *Pharmaceutical Research*. 20:143-148.

3.2 Books and Book Chapters (all invited)

1. Heck K₃, Farris E, Pannier AK. 2022. Formulation of Chitosan-Zein Nano-in-Microparticles for Oral DNA Delivery. In: Sullivan M, Chen W, and Chackerian B (eds) *Methods in Molecular Biology* (under review).
2. **Pannier AK**, Kozisek T₃, and Segura T. 2019. Surface- and Hydrogel-Mediated Delivery of Nucleic Acid Nanoparticles. In: Ogris M and Sami H (eds) *Nanotechnology for Nucleic Acid Delivery: Methods in Molecular Biology*. Vol. 1943.
3. Kasputis T₄, Farris E₃, Guerreiro G₃, Taylor J₂, **Pannier AK**. 2016. *The World Scientific Encyclopedia of Nanomedicine and Bioengineering I*. Liu Y, Wang P, editors. Chapter 6, Substrate-Mediated Gene Delivery; 219-260.
4. Martin TM₃, **Pannier AK**. 2016. *The World Scientific Encyclopedia of Nanomedicine and Bioengineering I*. Liu Y, Wang P, editors. Chapter 4, Molecular Mechanisms of Nonviral Gene Delivery; 141-173.
5. **Pannier AK** and Segura T. 2013. Surface- and Hydrogel-Mediated Delivery of Nucleic Acid Nanoparticles. In: Ogris M and Oupicky D (eds) *Nanotechnology for Nucleic Acid Delivery: Methods in Molecular Biology*. 948:149-69.

3.3 National and International Invited Talks or Keynote Speeches

1. **Pannier AK.** Oral Gene Delivery for Therapeutic and Vaccine Applications. Zoetis Annual Seminar Series (ZASS), Virtual, January 25, 2022 (invited and plenary).
2. **Pannier AK.** In Vitro Culture of Porcine Embryos within an Alginate Hydrogel Matrix. Annual Meeting of the Society for the Study of Reproduction, St. Louis, Missouri, December 18, 2021 (invited).
3. **Pannier AK.** Biomaterial Platforms for Oral DNA Delivery. Nebraska Drug Discovery and Development Pipeline (ND3P) Symposium. May 20, 2021 (invited).
4. **Pannier AK.** Bacterial-Derived Outer Membrane Vesicles for Gene Delivery. American Society of Gene and Cell Therapy, Therapeutic Application of EVs Education Session, Annual Meeting, May 13, 2021 (invited and plenary).
5. **Pannier AK.** Nonviral Gene Delivery Systems for Stem Cell and Oral DNA Vaccination Applications. Department of Chemical and Biochemical Engineering Seminar, Missouri University of Science and Technology April 19, 2021.
6. **Pannier AK.** Nonviral Gene Delivery Systems for Stem Cell and Oral DNA Vaccination Applications. Great Plains Biomaterials Day, hosted by University of Kansas Society for Biomaterials, Plenary Speaker, April 17, 2021.
7. **Pannier AK.** Understanding and Enhancing Nonviral Gene Delivery to Stem Cells for CRISPR and Exosome Applications. Trudeau Institute Graduate Seminar Series, March 5, 2021.
8. **Pannier AK.** Using Cell Priming and Modeling to Understand and Enhance Nonviral Gene Delivery to Stem Cells for CRISPR and Exosome Applications. Department of Biomechanics Seminar Series, University of Nebraska Omaha, February 5, 2021.
9. **Pannier AK.** Using Cell Priming and Modeling to Understand and Enhance Nonviral Gene Delivery to Stem Cells for CRISPR and Exosome Applications. Fischell Department of Bioengineering, University of Maryland Seminar Series, January 29, 2021.
10. **Pannier AK.** Using Cell Priming and Telecommunications Modeling to Understand and Enhance Nonviral Gene Delivery to Stem Cells. Duke University Department of Biomedical Engineering Graduate Seminar, Durham, NC, February 20, 2020.
11. **Pannier AK.** Designing and Assembly of Nano-Microparticles for Oral Gene Delivery Applications, including DNA Vaccination and Treatment of Gastrointestinal Tract Disease. American Society of Gene and Cell Therapy Annual Meeting Scientific Symposium "Applications of Disease-specific Delivery Systems" - Organized by the Nanoagents & Synthetic Formulations Committee, Chicago, IL, May 17, 2018.
12. **Pannier AK.** Priming Nonviral Gene Delivery for Stem Cell and Vaccination Applications. University of Michigan Dept. of Biomedical Engineering Graduate Seminar, Ann Arbor, MI, March 22, 2018.
13. **Pannier AK.** Improved Nonviral Gene Delivery Systems for Stem Cell Therapy and DNA Vaccination Applications. Division 22B Bionanotechnology Plenary (Nanoscale Science and Engineering Forum), American Institute of Chemical Engineers, Minneapolis, MN, October 29 – November 3, 2017 (Invited Plenary).
14. **Pannier AK.** Improving Nonviral Gene Delivery for Medical Applications through Chemical and Physical Priming of Cells. Leibniz-Institut für Polymerforschung Dresden e. V. Institute Lecture, Dresden, Germany, June 21, 2017.
15. Miles JR and **Pannier AK.** In Vitro Porcine Blastocyst Development in Three-Dimensional Alginate Hydrogels. 10th International Conference on Pig Reproduction, Columbia, Missouri, June 11-14, 2017 (Invited Plenary).
16. **Pannier AK.** Invited Panelist for "Can Modeling and Simulation Improve Human Performance" at 2017 IEEE International Conference on Electro Information Technology, Lincoln, NE, May 14-17, 2017.

17. **Pannier AK.** Designing Nonviral Gene Delivery Systems using Telecommunications Modeling, Cell Priming and Corn? University of Iowa Dept. of Biomedical Engineering Graduate Seminar, Iowa City, IA, March 4, 2016.
18. **Pannier AK.** Biomedical Engineering at the University of Nebraska: Perspectives on Advising, Courses and Design. Institute of Biological Engineering Annual Meeting, St. Louis, MO, March 7, 2015.
19. **Pannier AK.** Designing Nonviral Gene Delivery Systems Using Modeling, Nanotopography and Corn? University of Arkansas Dept. of Chemical Engineering Seminar Series, Fayetteville, AR, March 19, 2015.
20. **Pannier AK.** Nanotechnology for Nonviral Gene Delivery. National Association of Engineering Student Councils Midwest Meeting, Lincoln, NE, October 10, 2014.
21. **Pannier AK.** The Effect of Soluble Uterine Factors on Porcine Embryo Development within a Three-Dimensional Alginate Matrix System. TERMIS-AM 2013 Meeting, Atlanta, GA, November 10-12, 2013.
22. **Pannier AK.** Biomolecule Loading within Nanostructured Thin Films as Cell-Instructive Surfaces for Drug and Gene Delivery. "Design of Cell-Instructive Materials" Symposium at 2013 Materials Research Society Spring Meeting, April 1-5, 2013, San Francisco, CA.
23. **Pannier AK.** The Biology of Transfection: Promoting Gene Delivery through Intracellular Priming, Extracellular Interactions....and Corn? Northwestern University Biotechnology Training Grant Seminar Series, Evanston, IL, December 16, 2011.
24. **Pannier AK.** Substrate-Mediated Gene Delivery for Tissue Engineering and Diagnostic Applications. Alumni Lecture, Department of Biological Systems Engineering, University of Nebraska, Lincoln, NE, October 20, 2006.

3.4 Regional and Local Invited Talks or Keynote Speeches (from last five years, from over 30)

1. **Pannier AK.** Extracellular Vesicles for Nonviral Gene Delivery. Mary and Dick Holland Regenerative Medicine Program, Regenerative Medicine Symposium, University of Nebraska Medical Center, May 19, 2021.
2. **Pannier AK.** Using Cell Priming and Modeling to Understand and Enhance Nonviral Gene Delivery to Stem Cells for Clinical Applications. Nebraska Center for Virology Seminar, January 8, 2021.
3. **Pannier AK.** Enhancing Nonviral Gene Delivery to Stem Cells for Cell Therapy Applications. University of Nebraska Medical Center Surgery Forum, Omaha, NE, October 30, 2019.
4. **Pannier AK.** My Journey along the Double Helix: Full STEAM Ahead. Girl Scouts Spirit of Nebraska 2016-2017 Program Kickoff Event. Nebraska History Museum, Lincoln, NE, October 2, 2016.
4. **Pannier AK.** Priming Cell Responsiveness to DNA Transfer. University of Nebraska Medical Center for Regenerative Medicine 2016 Symposium, Mahoney State Park, NE, April 15, 2016.
5. **Pannier AK.** My Journey along the Double Helix. Women in Sciences Annual Conference, Lincoln, NE, February 19, 2016.
6. **Pannier AK.** Biomaterials for In Vitro Models of Development and Nonviral Gene Delivery. Research Seminar in Department of Surgery, University of Nebraska Medical Center, Omaha, NE, April 22, 2015.
7. **Pannier AK.** Biomaterials for Gene Delivery and Tissue Engineering Applications. BSE Departmental Colloquium, UNL, March 30, 2015.
8. **Pannier AK.** Biomaterials for In Vitro Models of Development and Improved Cell-Material Interactions. Research Seminar, VA Hospital, Omaha, NE, March 27, 2015.
9. **Pannier AK.** Gene Delivery and Therapy. Aurora Public Schools "Future Problem Solving" Lecture. University of Nebraska-Lincoln, March 4, 2015.

3.5 Peer Reviewed Conference Abstracts/Presentations (from past 5 years, from over 120)**

1. **Pannier AK**, Miles JR, Rempel LA, Walsh S₃, Biegert M₃. Influence of Maternal and Embryonic Extracellular Vesicles on the Initiation of Porcine Conceptus Elongation. USDA AFRI Animal Reproduction Project Director Meeting, St. Louis, MO Hybrid Meeting, December 14-15, 2021.
2. **Kozisek T₃**, Hamann A, **Pannier AK**. Modulation of Endogenous Gene Expression in Human Mesenchymal Stem Cells for Enhanced Transfection. Poster presented at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
3. **Samuelson L₃**, **Pannier AK**. Inhibition of Type I Interferon Signaling Improves Transfection in Human Mesenchymal Stem Cells. Poster presented at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
4. **Walsh SC₃**, Miles JR, Broeckling CD, Rempel LA, Wright-Johnson EC, **Pannier AK**. Utilization of 3D Hydrogel Culture Systems to Identify Metabolites Specific to Conceptus Elongation. Poster presented at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
5. **Hamann A**, Broad K₁, Kozisek T₃, **Pannier AK**. Nonviral Delivery of CRISPR Epigenome Editing System to Human Mesenchymal Stem Cells. Recorded Oral Presentation at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
6. **Heck K₃**, Ramer-Tait AE, **Pannier AK**. Bacterial Outer Membrane Vesicles as an Oral Gene Delivery Platform. Recorded Oral Presentation at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
7. **Hamann A**, Broad K₁, **Pannier AK**. A Transgenic System for Active Loading of miRNAs into Exosomes Using Aptamers. Poster presented at Biomedical Engineering Society Annual Meeting, Orlando, FL (Hybrid Meeting due to COVID-19), October 6-9, 2021.
8. **Heck K₃**, Ramer-Tait AE, **Pannier AK**. Bacterial-Derived Outer Membrane Vesicles Loaded with Plasmid DNA for Oral Gene Delivery. Oral Presentation at the Annual Controlled Release Society Meeting, Virtual Platform, July 2021.
9. **Hamann A**, Broad K₁, **Pannier AK**. Transgenic System for Loading miRNAs into Exosomes Using Aptamer-Linked Precursors. Poster Presentation at the Annual Controlled Release Society Meeting, Virtual Platform, July 2021.
10. **Heck K₃**, Ramer-Tait AE, **Pannier AK**. Optimization of Loading Outer Membrane Vesicles with Plasmid DNA. Poster presented at the Annual American Society of Gene and Cell Therapy Virtual Conference. May 11-14, 2021.
11. **Hamann A**, Broad K₂, **Pannier AK**. A Transgenic System for Active Loading of miRNAs into Exosomes Using Aptamers. Poster presented at the Annual American Society of Gene and Cell Therapy Virtual Conference. May 11-14, 2021.
12. **Hamann A**, Broad K₂, Kozisek T₃, **Pannier AK**. Nonviral Gene Delivery of CRISPR Epigenome Editing System to Human Mesenchymal Stem Cells. Poster presented at the Annual American Society of Gene and Cell Therapy Virtual Conference. May 11-14, 2021.
13. **Heck K₃**, Ramer-Tait AE, **Pannier AK**. Outer Membrane Vesicles Derived from Commensal Bacteria as a Vehicle for Oral Gene Delivery. Poster presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020.
14. **Samuelson L₃**, Wysocki BJ, Wysocki T, **Pannier AK**. Computational Modeling to Uncover Donor-Variability in Transfection of Human Mesenchymal Stem Cells. Poster presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020
15. **Kozisek T₃**, Hamann A₃, Samuelson L₃, **Pannier AK**. Screening DNA Vectors for Enhanced Nonviral Gene Delivery to Human Mesenchymal Stem Cells. Poster presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020.

16. Hamann A₃, Broad K₂, **Pannier AK**. A System for Active Loading of miRNAs into Exosomes with Cellular Machinery. Video presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020.
17. Hamann A₃, Kozisek T₃, Broad K₁, **Pannier AK**. Optimizing Nonviral Gene Delivery to Human Mesenchymal Stem Cells for CRISPR Epigenome Editing. Video presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020.
18. Walsh SC₃, Miles JR, Wright-Johnson EC, Keel BN, Rempel LA, **Pannier AK**. Utilization of a 3D Hydrogel Culture System to Study Reproductive Process of Conceptus Elongation In Vitro. Poster presented at Biomedical Engineering Society Annual Meeting (Virtual Meeting due to COVID-19), October 14-17, 2020.
19. Hamann A₃, Broad K, **Pannier AK**. A System for Active Loading of miRNAs into Exosomes with Cellular Machinery. American Society for Gene and Cell Therapy Annual Meeting, Boston, MA, May 12-15, 2020. (virtual due to COVID-19).
20. Nguyen A₃, Zuhlke C, Alexander D, **Pannier AK**. High Throughput Screen Optimization of Surface Topographies with Media Additives to Prime Human Mesenchymal Stem Cell Transfection. American Society for Gene and Cell Therapy Annual Meeting, Boston, MA, May 12-15, 2020. (virtual due to COVID-19).
21. Kozisek T₃, Hamann A₃, Samuelson L₃, **Pannier AK**. Screening DNA Vectors for Enhanced Nonviral Gene Delivery to Human Mesenchymal Stem Cells. American Society for Gene and Cell Therapy Annual Meeting, Boston, MA, May 12-15, 2020. (virtual due to COVID-19).
22. Walsh S₃, Miles JR, Wright-Johnson EC, Keel B, Rempel LA, **Pannier AK**. Transcriptomic profiles of uniform populations of in vivo-produced spherical, ovoid, or tubular porcine embryos during the initiation of elongation. *Reproduction, Fertility and Development* 32, 152, presented at International Embryo Technology Society, New York, New York, January 18, 2020.
23. Babinchak A₁, Kozisek T₃, Hamann A₃, **Pannier AK**. Modulation of Non-Viral Gene Delivery to Human Mesenchymal Stem Cells via Combinational Priming. Biomedical Engineering Society Annual Meeting, Philadelphia, PA Oct. 16 – 19, 2019.
24. Hamann A₃, Thomas AK, Kozisek T₃, Farris E₃, Lück S, Zhang Y, and **Pannier AK**. Screening a Chemically Defined Extracellular Matrix Mimetic Substrate Library to Identify Substrates that Enhance Substrate-Mediated Gene Delivery. Biomedical Engineering Society National Conference. Philadelphia, PA. October 16–19, 2019.
25. Hamann A₃, Kozisek T₃, and **Pannier AK**. Pharmacological Priming of Human Mesenchymal Stem Cells to Enhance Nonviral Gene Delivery of CRISPR Epigenome Editing System. Biomedical Engineering Society National Conference. Philadelphia, PA. October 16–19, 2019.
26. Nguyen A₃, Zuhlke C, Alexander D, **Pannier AK**. In-Well Gradient Femtosecond Laser Surface Processing for Combinatorial Optimization Of Culture Surface Topography And Glucocorticoid Media Priming For Human Mesenchymal Stem Cell Transfection. Biomedical Engineering Society Annual Meeting. Philadelphia, PA. October 16 – 19, 2019.
27. Mantz A₃, Nguyen A₃, Nazari S, Bittrich E, Schubert M, Uhlmann P, **Pannier AK**. Tuning the Properties of RGD Peptides and Polyethylenimine Vectors for Optimization of Nonviral Substrate Mediated Gene Delivery to NIH/3T3 Fibroblasts and Human Mesenchymal Stem Cells Cultured on Poly(acrylic acid) Brushes. Biomedical Engineering Society Annual Meeting. Philadelphia, PA. October 16 – 19, 2019.
28. Lampe AT₃, Farris EJ₃, Ballweg MD, Brown DM, and **Pannier AK**. Chitosan Polymers Enhance Protection Elicited by a Single Dose Influenza A Virus Protein Vaccination. Biomedical Engineering Society Annual Meeting. Philadelphia, PA, October 16-19, 2019.
29. Kozisek T₃, Hamann A₃, Miller M₁, Plautz S, and **Pannier AK**. Enhancing Nonviral Gene Delivery to Human Mesenchymal Stem Cells via Chemical Priming. Biomedical Engineering Society Annual Meeting. Philadelphia, PA, Oct. 16 – 19, 2019.
30. Heck K₃, Farris E₃, Ramer-Tait AE, and **Pannier AK**. Development of a Dual Biomaterial

- Nanoparticle System for Oral Non-Viral Gene Delivery. Biomedical Engineering Society Annual Meeting. Philadelphia, PA, October 16-19, 2019.
31. Samuelson L₃, Wysocki BJ, Wysocki T, **Pannier AK**. A Telecommunications-Based Model of Transfection in Human Mesenchymal Stem Cells. Biomedical Engineering Society Conference. Philadelphia, PA, October 16 - October 19, 2019.
 32. Kozisek T₃, Hamann A₃, Miller M₁, Plautz S, and **Pannier AK**. Pharmacological Priming of Human Mesenchymal Stem Cells for Enhanced Nonviral Gene Delivery Towards Tissue Engineering Applications. Biomaterials & Tissue Engineering Gordon Research Conference. Barcelona, Spain, July 28 – August 2, 2019.
 33. Kozisek T₃, Hamann A₃, Miller M₁, Plautz S, and **Pannier AK**. Screening of Clinically Approved Drugs that Prime Nonviral Gene Delivery to Human Mesenchymal Stem Cells. NIH High Risk, High Reward Symposium, Bethesda, MD, June 5-7, 2019.
 34. Miller M₁, Kozisek T₃, Hamann A₃, Nguyen A₃, **Pannier AK**. Effects of Chemical Priming on Nonviral Gene Delivery to Human Mesenchymal Stem Cells. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 35. Lampe AT₃, Farris EJ₃, Ballweg MD, Brown DM, **Pannier AK**. Chitosan Acts as an Adjuvant by Enhancing Antibody Responses After a Single Dose Protein Vaccination. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 36. Mantz A₃, Rosenthal A, Farris E₃, Schubert E, Schubert M, Uhlmann P, **Pannier AK**. Titanium Functionalized with Poly(acrylic) Acid Brushes for Substrate Mediated Gene Delivery. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 37. Farris E₃, Boren M₁, Helmink A₁, Lampe A₃, Brown DM, Ramer-Tait AE, **Pannier AK**. Modified Chitosan-Zein Nano-in-Microparticles for Oral DNA Vaccination. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 38. Hamann A₃, Broad K₁, Nguyen A₃, **Pannier AK**. Molecular Mechanisms of Glucocorticoid-Induced Enhancement of Non-Viral Gene Delivery to Human Mesenchymal Stem Cells. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 39. Nguyen A₃, Mostafavi A, Mishra Y, Tamayol A, **Pannier AK**. Microparticle-Mediated Membrane Puncture Enhances Lipofection of Human Mesenchymal Stem Cells. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 40. Heck K₃, Farris E₃, Ramer-Tait AE, **Pannier AK**. Formulation and Characterization of Gelatin-DNA Nanoparticles for Gelatin-Zein Nano-in-Microparticles for Oral Gene Delivery. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 41. Walsh S₃, Erickson A, Lee D, Laughlin T₂, Dudley A, **Pannier AK**. Single-Cell RNA-Seq Confirms Growth Plate Zonal Architecture in 3D Alginate Hydrogel In Vitro Model. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 42. Kozisek T₃, Hamann A₃, Miller M₁, **Pannier AK**. Screening of Clinically Approved Drugs that Prime Nonviral Gene Delivery to Human Mesenchymal Stem Cells. Biomedical Engineering Society Annual Meeting, Atlanta, GA, October 17-20, 2018.
 43. **Pannier AK**, Miles JR, Rempel LA, Walsh S₃, Wright-Johnson E, Prenni J, Broeckling C. Understanding Molecular Factors that Regulate Initiation of Porcine Embryo Elongation AFRI Animal Reproduction Project Director Meeting, New Orleans, LA, July 9-10, 2018.
 44. Walsh S₃, Erickson A, Laughlin T₂, Dudley AT, **Pannier AK**. Use of In Vitro Hydrogel Model to Direct Zonal Formation of Growth Plate Cartilage. ECI Nanotechnology in Medicine II: Bridging Translational in Vitro and in Vivo Interfaces Meeting, Albuferia, Portugal, June 4-8, 2018.
 45. Hamann A₃, Kozisek T₃, Broad K₁, Nguyen A₃, **Pannier AK**. Mechanisms of Enhanced Nonviral Gene Delivery to Human Mesenchymal Stem Cells Induced by Glucocorticoids Priming. ECI Nanotechnology in Medicine II: Bridging Translational in Vitro and in Vivo Interfaces Meeting, Albuferia, Portugal, June 4-8, 2018.

46. Lampe AT₃, Hain JL, Farris E₃, **Pannier AK** and Brown DM. Pattern recognition receptor agonists enhance protection elicited by a single, low dose protein vaccine in an immunization route-specific manner. American Association of Immunologists IMMUNOLOGY 2018 Conference. Austin, TX. May 10, 2018.
47. Brown DM, Lampe AT₃, Hain JL, and **Pannier AK**. Molecular characterization of combination pattern recognition receptor agonist exposure on dendritic cell responses. American Association of Immunologists IMMUNOLOGY 2018 Conference. Austin, TX. May 10, 2018.
48. Nguyen A₃, Peev D, Briley C, Ruder A, Schubert M, **Pannier AK**. Imaging cell-nanostructure interactions via anisotropy contrast optical microscopy: Contrast enhancement and quantitative estimation of protein adsorption and infiltration. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 11-14, 2017.
49. Hamann A₃, Broad K₁, Nguyen A₃, Baher F₁, Toner A₁, **Pannier AK**. Molecular Biological Mechanisms of Enhanced Non-Viral Gene Delivery to Human Mesenchymal Stem Cells Induced by Glucocorticoid Priming. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, October 11-14, 2017.
50. Mantz A₃, Rice C, Sekora D, Franke-Schubert E, Schubert M, **Pannier AK**. Sculptured Thin Films Alter Cellular Actin Features and Transfection Efficacy. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, October 11-14, 2017.
51. Mantz A₃, Rosenthal A, Franke-Schubert E, Schubert M, Uhlmann P, **Pannier AK**. Functionalization of Titanium with Poly(acrylic acid) Brushes. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, October 11-14, 2017.
52. Farris E₃, Helmink A₁, Lampe A₃, Ramer-Tait A, Brown D, **Pannier AK**. Modified Chitosan-Zein Nano-in-Microparticles For Oral DNA Vaccination. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, October 11-14, 2017.
53. Kozisek T₂, Nguyen A₃, Hamann A₃, Mantz A₃, Schubert E, Schubert M, **Pannier AK**. Chemical and Physical Priming of Human Mesenchymal Stem Cells to Alter Nonviral Gene Delivery Outcomes. Biomedical Engineering Society Annual Meeting, Phoenix, AZ, October 11-14, 2017.
54. Uhlmann P, Revzin A, Schubert M, **Pannier AK**. Responsive Bio-interactive Films by Using Nanostructured Polymer Brushes. ECOF (15th European Conference on Organized Films). Dresden, Germany, July 17-20, 2017.
55. Brown DM, Lampe AT₃, Farris E₃, Williams JA, **Pannier AK**. Chitosan nanoparticle delivery of Influenza A Virus DNA vaccine enhances antibody class switching and abrogates weight loss post IAV challenge P855. IMMUNOLOGY 2017, Washington, D.C., May 12- 16, 2017.
56. Uhlmann P, Revzin A, Schubert M, **Pannier AK**. Responsive Biomaterials by Using Nanostructured Polymer Brush Films. 5th International Conference on Multifunctional, Hybrid and Nanomaterials. Lisbon, Portugal, March 6-10, 2017.
57. Koenig M, Kasputis T₄, Schmidt D, Rodenhausen KB, **Pannier AK**, Sekora D, Rice C, Schubert E, Schubert M, Eichhorn KJ, Stamm M, Uhlmann P. Spatiotemporally and Morphologically-Controlled Biomaterials for Medical Applications. Material Research Society Fall Meeting. Boston, MA, November 27 – December 2, 2016.
58. Laughlin TD₂, Erickson A, Dudley AT, and Pannier AK. Multi-zonal three-dimensional in vitro culture of growth plate cartilage using alginate hydrogel scaffolds. American Institute of Chemical Engineers Annual Meeting, San Francisco, CA. November 12-18, 2016.
59. Rodenhausen KB, Koenig M, Kasputis T₄, Schmidt D, **Pannier AK**, Sekora D, Rice C, Schubert E, Schubert M, Eichhorn KJ, Stamm M, Uhlmann P. Functionalized three-dimensional spatially coherent thin films for biomaterial applications. 2016 Symposium on Biomaterials Science, Iselin, NJ, October 24-25, 2016.
60. Farris E₃, Brown D, Ramer-Tait A, **Pannier AK**. Chitosan-Zein Nano-in-Microparticles for Oral Gene Therapy and DNA Vaccination. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 5-8, 2016.
61. Mantz A₃, Rice C₂, Sekora D, Franke-Schubert E, Schubert M, and **Pannier AK**. Altering Cell

- Behavior and Morphology with Highly Ordered Nanostructured Surfaces. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 5-8, 2016.
62. Nguyen A₃, Kasputis T₄, Peev D, Franke-Schubert E, **Pannier AK**, Schubert M. Optical Anisotropy Contrast Microscopy: Imaging Ellipsometry of Cells Cultured On Birefringent Nanostructures Enables Live-Cell Label-Free Observation Of Cell Features And Cell-Substrate Interactions. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, Oct. 5-8, 2016.
 63. Nguyen A₂, Beyersdorf J₁, Riethoven JJ, **Pannier AK**. High-Throughput Screening Of Clinically Approved Drugs That Prime PEI Transfection Reveals Modulation Of Mitochondrial Dysfunction Response Improves Gene Transfer Efficiencies. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 5-8, 2016.
 64. Hamann A₂, Nguyen A₃, Baher F₁, Broad K₁, Toner A₁, **Pannier AK**. Enhancing nonviral gene delivery to human mesenchymal stem cells using glucocorticoid pathways. Biomedical Engineering Society Annual Meeting, Minneapolis, MN, October 5-8, 2016.
 65. Miles JR, Wright-Johnson EC, Laughlin TD₂, Broeckling CD, Rempel LA, **Pannier AK**. Non-targeted metabolomic evaluation of the uterine milieu during the transitional period of embryo elongation in the pig. American Society of Animal Science, America Dairy Science Association, Western Section of the American Society of Animal Science, and Canadian Society of Animal Science Joint Annual Meeting, Salt Lake City, UT, July 19-23, 2016.
 66. Kasputis T₄, Peev D, Nguyen A₃, Mantz A₃, Franke-Schubert E, **Pannier AK**, Schubert M. Imaging Ellipsometry of Cells Cultured on Optically Anisotropic Nanostructured Surfaces. 7th International Conference on Spectroscopic Ellipsometry (ICSE-7), Berlin, Germany, June 5-10, 2016.

3.6 Patents

1. Segura T, Shea LD, **Pannier AK**, Bengali Z, Jang JH, Chung P, and Anderson B. Controlled surface-associated delivery of genes and oligonucleotides. U.S. Patent No. 7,029,697. April 2006.
2. **Pannier AK**, Schubert M, Hofmann T, Kasputis TJ, Herzinger CM, Woollam JA. Method to obtain micrographs of transparent or semi-transparent specimens using anisotropy contrast. U.S. Patent No. 10,026,167. July 2018.
3. Heck K, Ramer-Tait AE, **Pannier AK**. Therapeutic Compositions Containing Bacterial Outer Membrane Vesicles and Uses Thereof. Provisional Patent filed July 28, 2021.

3.7 Other Publications Outreach, and Press (Research-Related)

1. COVID-19 Vaccine Outreach Events, *co-hosted with Dr. Amanda Ramer-Tait:
 - a. Public Zoom event, 11/28/2020*
 - b. Public Zoom event, 12/12/2020*
 - c. Civic Nebraska, 1/27/2021
 - d. Anvyl, 3/24/2021*
 - e. UNL BSE Department, 4/8/2021
 - f. Kiwanis Club of Greater Omaha, 4/12/2021
 - g. UNL AGEN/BSEN 112 class, 4/14/2021
 - h. UNL Extension Employee Wellness, 4/22/2021*
 - i. UNL IANR Staff, 5/24/2021 & 5/25/2021*
 - j. Nebraska Coalition for Lifesaving Cures "Talking Research", 6/17/2021
 - k. Public Zoom event, 9/19/2021*
 - l. IANR Legislative Senator Appreciation Dinner, 10/4/2021
 - m. Public Zoom event, 10/10/2021*
 - n. UNL ASUN Sponsored Event, 11/10/2021*
 - o. UNL IACUC Staff, 12/2/2021*

2. Chemometrics works just fine to shed new light on baby swine. Chemometrics and Informatics. January 6, 2020
https://analyticalscience.wiley.com/doi/10.1002/sepspec.16f7b2aff49/full/?fbclid=IwAR3Wx5flx_qcQiEExQN3WnMV-5jtTdOIJ0osnVvfeQQoGRuO3OC9ufCKE86M
3. Delivering genes and receiving honors—Q&A with Angela Pannier. August 14, 2019.
blogs.biomedcentral.com/on-biology/2019/08/14/delivering-genes-and-receiving-honors-ga-with-angela-pannier/
4. Particle offers promise for vaccine in pill form. NSF Science360 News, April, 13, 2017 (<https://news.science360.gov/archives/20170413/>). Also featured on sNEWSi (<http://snewsi.com/id/17252351456/Particle-offers-promise-for-vaccine-in-pill-form>), Health Medicine Network (<http://healthmedicinet.com/microparticles-show-potential-to-deliver-dna-based-vaccines-and-gene-therapies-in-pill-form/>) and hubbiz (<https://hub.biz/blog/particle-offers-promise-vaccine-pill-form-8012133784134627931>)
5. New method offers promise of DNA-based vaccines in pill form. P&T Community, April 11, 2017 (<https://www.ptcommunity.com/news/20170411/new-method-offers-promise-dna-based-vaccines-pill-form>)
6. August is National Immunization Awareness Month. August 2015 Blog for HONORreform (<http://www.honoreform.org/blog/?m=201508>)
7. Congressional (Senate and House) Briefing, June 24, 2015. Science 2034 Live Podcast (<http://www.science2034.org/science-2034-live/podcast-science-2034-live/>)
8. **Pannier AK.** Safer, faster, easier vaccines. Science 2034 Blog. January 2015 (<http://www.science2034.org/medicine/safer-faster-easier-vaccines/>)

4. RESEARCH FUNDING RECORD

Over 15 years, ~\$900,000 total in internally funded research grants (\$460,800 as PI) and ~\$18.5 Million total in externally funded research grants (\$4.31 Million as PI). As of January 2022, there are two pending NIH R21 grants (with AK Pannier as PI on both), for ~\$805,000 and pending NIH DP2 grant (with AK Pannier as PI) for ~\$445,000.

4.1 Selected Externally Funded Research Grants

- MSCs for miRNA-Loaded and Cell-Targeting Exosomes (9/21/2021-6/30/2022)
Sponsor: Nebraska Department of Health and Human Services
PI: A Hamann (70%)
Co-PI: AK Pannier (30%)
Sponsor Amount: \$25,000
- Outer Membrane Vesicles derived from Gut Bacteria as Nanocarriers for Oral DNA Vaccines for SARS-CoV-2 (4/1/2021-6/30/2022)
Sponsor: Great Plains IDeA-CTR Network (NIH)
PI: AK Pannier (50%); Co-PI: AE Ramer-Tait (50%)
Sponsor Amount: \$74,250
- Influence of maternal and embryonic extracellular vesicles on the initiation of porcine conceptus elongation (7/1/2021-6/30/2024)
Sponsor: U.S. Department of Agriculture-NIFA
PI: AK Pannier (100%); Co-PI: JR Miles, L Rempel (subaward)
Sponsor Amount: \$500,000
- Supplement to NIH DP2: Engineering Human Mesenchymal Stem Cells through Primed Transfection as a Cell Therapy for Alzheimer's Disease (09/19/2019 – 05/31/2021)
Sponsor: National Institutes of Health (3DP2EB025760-01S1)

PI: AK Pannier
Sponsor Amount: \$134,572

- Using Cell Priming and Telecommunications Modeling to Enhance Gene Delivery for Stem Cell Therapies, (09/30/2017-06/30/2022)
Sponsor: National Institutes of Health, DP2 Director's New Innovator (1DP2EB025760-01)
PI: AK Pannier
Sponsor Amount: \$2,197,500
- INBRE-Nebraska Research Network in Functional Genomics (5/1/2020 – 6/30/2024)
Sponsor: National Institutes of Health, NIGMS (2P20 GM103427-19)
PI: P Sorgen; Role: UNL Steering Committee member (7.5%)
Sponsor Amount: \$657,480
- Understanding Molecular Factors that Regulate Initiation of Porcine Embryo Elongation (04/01/2017 – 03/31/2021)
Sponsor: Department of Agriculture-NIFA (2017-67015-26456)
PI: AK Pannier; Co-PI: JR Miles, L Rempel (subaward)
Sponsor Amount: \$465,000
- Stem Cell Expansion and Differentiation on Nanostructured Surfaces Produced by Glancing Angle Deposition, GLAD (08/15/2016-08/15/2018)
Sponsor: J.A. Woollam Foundation
PI: AK Pannier
Sponsor Amount: \$77,629
- Improving Teacher Quality through Biomedical Engineering BLAST! Workshops (3/11/2016-5/17/2018)
Sponsor: Nebraska Coordinating Commission for Postsecondary Education
PI: J Keshwani; Co-PIs: AK Pannier, N Iverson, K Adams
Sponsor Amount: \$43,221
- MRI: Development of an Ion-Beam-assisted Glancing Angle Deposition Tool (iGLAD) for 3D Nanostructure Thin Film Preparation with in-situ Ellipsometry Control, (10/01/2013 to 09/30/2017)
Sponsor: National Science Foundation (CMMI-1337856)
PI: E Schubert; Co-PIs: AK Pannier, et al.
Sponsor Amount: \$411,50/Cost share: \$177,118
- CAREER: Nanostructured Thin Films for Substrate-Mediated Gene Delivery, (07/01/2013 - 06/30/2019)
Sponsor: National Science Foundation (CBET-1254415)
PI: AK Pannier
Sponsor Amount: \$419,051
- MRI: Development of Multifunctional CARS (Coherent Anti-Stokes Raman Spectroscopy) Imaging System, (09/01/2011 - 08/31/2014)
Sponsor: National Science Foundation (1126208)
PI: Y Lu; co-PIs: AK Pannier, S Ducharme, N Chandra, Y Zhou, P Black
Sponsor Amount: \$266,460/Cost share: \$192,120

- Microarray Analysis of Gene Expression Profiles in Cells Transfected with Nonviral Gene Delivery Vectors (01/01/2010 – 12/31/2013)
Sponsor: American Heart Association National Affiliate Grant (#10SDG2640217)
PI: AK Pannier
Sponsor Amount: \$307,808

4.2 External Contracts-CONFIDENTIAL (\$1.26 Million estimated through end of signed contract)

- [REDACTED] 10/2012 – 12/2013. **\$31,172**. PI: **AK Pannier**
- [REDACTED] 01/2014 – 12/2014. **\$16,000**. PI: **AK Pannier**
- [REDACTED] 01/2015 – 12/2015. **\$106,730**. PI: **AK Pannier**
- [REDACTED] 01/2016 – 12/2016. **\$110,000**. PI: **AK Pannier**
- [REDACTED] 01/2017—12/2017. **\$133,000**. PI: **AK Pannier**
- [REDACTED] 01/2018—12/2018. **\$130,000**. PI: **AK Pannier**
- [REDACTED] 01/2019—12/2019. **\$133,000**. PI: **AK Pannier**
- [REDACTED] 01/2020—12/2020. **\$135,000**. PI: **AK Pannier**
- [REDACTED] 01/2021—12/2021. **\$235,000**. PI: **AK Pannier**
- [REDACTED] 01/2022—12/2022. **\$235,000**. PI: **AK Pannier**

Note: Client name and details of contract are protected under an NDA.

5. SERVICE ACCOMPLISHMENTS

5.1 Editorial and Journal Advisory Boards

1. Associate Editor, *Science Advances*, July 2020 – present.
2. Editorial Board Member, *Experimental Biology and Medicine*, January 2017 – present (reappointed in November 2019).
3. Editorial Board Member, *Regenerative Medicine Frontiers*, September 2018 – present.
4. Advisory Board Member, *Journal of Materials Chemistry B*, January 2020 – present.
5. Advisory Board Member, *Materials Advances*, September 2020 – present.

5.2 Ad Hoc Journal Reviewer

1. *Macromolecular Bioscience*, 1/2008; 12/2008; 1/2009; 8/2009
2. *Biomacromolecules*, 5/2008; 2/2009; 6/2009; 8/2009; 9/2010; 2/2012; 6/2012; 9/2012; 12/2012; 2/2013; 8/2015; 12/2019
3. *Bioengineering & Biotechnology*, 5/2008; 5/2013, 9/2013; 11/2013; 2/2018; 6/2018; 8/2018; 6/2020; 10/2020
4. *Journal of Biomaterials Science, Polymer Edition*, 5/2008
5. *Biochemical Engineering Journal*, 6/2009
6. *Tissue Engineering*, 2/2009; 12/2013; 2/2014
7. *ASABE Journal*; 8/2009
8. *Journal of Biomedical Materials Research: Part A*, 8/2009; 07/2012; 11/2017; 1/2018
9. *Gene Therapy*, 10/2009; 3/2017; 5/2017
10. *WIREs Nanomedicine & Nanobiotechnology*, 10/2009
11. *Microscopy Research & Technique*, 12/2009; 09/2011
12. *Molecular Pharmaceutics*, 2/2010; 4/2011; 1/2012; 12/2012; 2/2015; 5/2015; 7/2016
13. *Trends in Biotechnology*, 10/2010
14. *Acta Biomaterialia*, 9/2010; 2/2013; 4/2013; 9/2013 1/2014; 3/2014; 5/2014; 6/2015; 12/2015; 11/2016; 3/2018; 4/2018; 5/2020; 10/2021
15. *Wound Healing Society Year Book (WHSYB)- Advances in Wound Care*, 6/2011
16. *Small*, 08/2011; 7/2016

17. *Soft Matter*, 09/2011
18. *Bioconjugate Chemistry*, 10/2011
19. *Journal of Nanobiotechnology*, 11/2012
20. *Journal of Biological Engineering*; 12/2012; 11/2014
21. *Langmuir*; 2/2013; 9/2013
22. *ACS Nano*, 8/2014; 2/2015; 11/2020; 5/2021
23. *ACS Biomaterials Science & Engineering*; 8/2015; 7/2016; 8/2016; 8/2017; 1/2018
24. *PLOS One*, 9/2015; 1/2016
25. *Journal of Gene Medicine*; 10/2014
26. *Food Hydrocolloids*, 5/2014
27. *International Journal of Pharmaceutics*, 5/2014; 4/2018
28. *Polymer Chemistry*, 11/2013
29. *Experimental Biology and Medicine*, 2/2016; 4/2016; 1/2017
30. *Molecular Therapy*, 03/2016; 12/2016
31. *Stem Cell Reviews and Reports*, 5/2016
32. *Colloids and Surfaces B: Biointerfaces*, 5/2016
33. *Bioengineering & Translational Medicine*, 5/2016
34. *Current Issues in Molecular Biology*, 7/2016
35. *Nanomaterials*, 11/2016
36. *Biomaterials*, 12/2016; 2/2017; 6/2018; 12/2020
37. *Journal of Drug Delivery Science and Technology*, 3/2017
38. *Scientific Reports*, 6/2017
39. *Innate Immunity*, 6/2017
40. *Advanced Science*, 8/2017
41. *International Journal of Biological Macromolecules*, 8/2017
42. *International Journal of Nanomedicine*, 8/2017; 11/2017
43. *Journal of Polymer Science, Part A: Polymer Chemistry*, 2/2018
44. *Materials Science & Engineering C*; 6/2018; 1/2019
45. *Journal of Physical Chemistry*, 7/2018
46. *Journal of Controlled Release*, 6/2019
47. *Journal of Tissue Engineering and Regenerative Medicine*, 9/2019
48. *ACS Applied Bio Materials*, 12/2019; 10/2020
49. *Advanced Biosystems*, 3/2020; 7/2020
50. *Biotechnology Progress*, 3/2020; 05/2020
51. *Analytical Biochemistry*, 05/2020
52. *Plasmid*, 8/2020
53. *Journal of Materials Chemistry, B*, 10/2020
54. *ACS Applied Materials & Interfaces*, 3/2021

5.3 Leadership Positions in International and National Organizations

- American Institute of Chemical Engineers (AIChE)
 1. Chair/co-chair of technical sessions in Materials Engineering and Sciences Division (MES) and Food, Pharmaceutical & Bioengineering Division (FPB) (responsible for abstract recruiting, reviewing, session organization and leading at meeting):
 - 2008: Biomaterials for Gene Delivery (MES)
 - 2009: Gene Delivery I, II and III (FPB)
 - 2010: Biomaterials for Gene Delivery (MES)
 - 2011: Building Drug and Gene Delivery into Tissue Engineering (MES)
 - 2012: Biomaterials for Nucleic Acid Delivery (MES)
 - 2013: Biomaterials I, Biomaterials II (MES)

- 2014: Biomaterials for Drug and Gene Delivery (MES)
- 2015: Biomaterials for Nucleic Acid Delivery (MES)
- 2016: Area Plenary: Leaders in Biomaterials (MES)
- 2017: Biomaterials: Faculty Candidates (MES)

- The Institute of Biological Engineering (IBE)
 1. National Councilor 2001-2002
 2. Chair/co-chair of technical sessions (responsible for abstract recruiting, reviewing, session organization and leading session at meeting):
 - 2010: Tissue and Cellular Engineering
 - 2012: Tissue and Cellular Engineering
 - 2013: Tissue and Cellular Engineering
 - 2014: Tissue and Cellular Engineering
 - 2015: Tissue and Cellular Engineering
 3. Graduate Student Poster Judge, 2012, 2013, 2014
 4. Vice Chair of Biomedical Engineering Community, 2012

- Biomedical Engineering Society (BMES)
 1. Invited 2017 Biomaterials Track Chair (with Ben Keselowsky, University of Florida)
 - Responsible for recruiting abstract reviewers and submissions, assigning three reviewers to each abstract (240 submitted to Biomaterials Track in 2017), managing reviews and scores, and assembling abstracts into 17 sessions (with 4 additional sessions jointly hosted with other Tracks), and recruiting/assigning all session chairs.
 2. Abstract Reviewer:
 - 2013: Drug Delivery Track
 - 2017: Biomaterials Track
 - 2020: Drug Delivery and Biomaterials Track
 3. Chair/co-chair of technical sessions:
 - 2013: Cancer Drug Delivery
 - 2015: Biomaterials for Immunoengineering
 - 2016: Gene Delivery and Genome Bioengineering
 - 2017: Hydrogel Biomaterials

- American Society for Gene and Cell Therapy (ASGCT)
 1. Member of the Nanoagents & Synthetic Formulations Committee (2018- 2021):
 - a. Responsible for organization of scientific and educational symposia for annual meetings.
 2. Abstract Reviewer for Synthetic/Molecular Conjugates/Physical Methods Sessions (2020 and 2021)
 3. Session co-chair for Exosome Education Session (2020)

- ECI Nanotechnology in Medicine II: Bridging Translational in Vitro and in Vivo Interfaces
 1. Organizing session chair for “Biomaterials and the Cellular Niche: Models and Mechanisms” session, at ECI meeting in Albufeira, Portugal, June 4-8, 2018.

5.4 Memberships in Professional Organizations

1. American Association for the Advancement of Science (AAAS)

2. American Society of Gene & Cell Therapy (ASGCT)
3. American Institute of Chemical Engineers (AIChE)
4. The Institute of Biological Engineering (IBE) –past member
5. Biomedical Engineering Society (BMES)
6. Society of Women Engineers (SWE)
7. Society for Experimental Biology and Medicine
8. Society for the Study of Reproduction

5.5 Review panels and dates of service

1. NIH BST-80 AREA Panel (9/2017& 5/2020 & 10/2020)
2. NIH Innovator DP2 Ad Hoc First Round Study Section (12/2019 and 12/2020)
3. NIH Bioengineering SBIR Panel (03/2016 & 11/2016 & 07/2019)
4. NIH IRCN Study Section (3/2019)
5. NIH BST IRG Study Section for Standing Member Proposals (11/2018; 6/2021)
6. NIH GDD Study section (6/2018)
7. NIH NANO Study section (2/2018 and 2/2021)
8. NSF BME Program (3/2017)
9. NSF CBET Program (12/2012; 11/2013; 9/2014; 9/2015; 9/2016)
10. Nebraska NSF EPSCoR First Awards (Fall 2015)
11. NIH BMBI Study section (10/2014 & 10/2021)
12. India Science & Technology Partnership (INSTP) at Smithsonian Institution (4/2010)
13. NSF Biomaterials Program (3/2010; 5/2011)
14. Kentucky Science and Engineering Foundation (4/2009; 4/2013)
15. Gilbert Family Foundation, 2021 GTI Research Grant Proposal Review

5.6 University Service

5.6.1 Leadership positions on university-wide committees

1. Co-Chair, Academic Rights and Responsibilities Special Grievance Committee, University of Nebraska, Lincoln, NE (January 2021 – October 2021).
2. Inaugural Member, Academic Public-Private Advisory Board (APPB) of the Great Plains IDeA-Clinical and Translational Research (GP IDeA-CTR) Network, University of Nebraska Medical Center (August 2020 – present).
3. Co-Chair, N2025 Strategy Team, University-Wide Strategic Planning Committee, University of Nebraska, Lincoln, NE (February 2019 – February 2020).
4. Steering Committee Member, NIH INBRE, State-Wide Program, University of Nebraska Medical Center (January 2018 – present).
5. Chair, IANR Liaison Committee, University of Nebraska, Lincoln, NE (August 2016 – June 2016).

5.6.2 Membership positions on university wide committees

1. Office of Research and Economic Development Research Advisory Board, University of Nebraska, Lincoln, NE (August 2021 – present).
2. Grand Challenges Steering Committee, Office of Research and Economic Development, University of Nebraska, Lincoln, NE (June 2021 – present).
3. Member, University Professorships Committee, University of Nebraska, Lincoln, NE (October 2020 – present).
4. Member, T32 Molecular Mechanisms of Disease Executive Committee, University of Nebraska, Lincoln, NE (March 2020 – present).
5. Member, Fred and Pamela Buffet Cancer Center, University of Nebraska Medical Center, (April 2020 – present).
6. Member, Faculty Advisory Committee, Center for Biotechnology, University of Nebraska, Lincoln,

- NE (November 2019 – present).
7. Member, Executive Board, Nebraska Drug Development Pipeline (November 2019 – present).
 8. Member (elected), Academic Rights and Responsibilities Panel, University of Nebraska, Lincoln, NE (March 2019 – present).
 9. Member, Scientific Research Oversight Committee, University of Nebraska, Lincoln, NE (January 2018 – present).
 10. Member, Advisory Board, Nebraska Center for Virology, University of Nebraska, Lincoln, NE (March 2019 – December 2020).
 11. Member, Commission of 150 (Research, Scholarship and Creativity Subcommittee), University of Nebraska Strategic Planning Committee, University of Nebraska, Lincoln, NE (March 2018 – December 2018).
 12. Member, Graduate Student Advisory Board, University of Nebraska, Lincoln, NE (2018 – 2020).
 13. Member, F&A Task Force, Office of Research and Economic Development, University of Nebraska, Lincoln, NE (October 2017 – December 2017).
 14. Member, Steering Committee for UNL-AWIS Institutional Partnership, University of Nebraska, Lincoln, NE (July 2017 – May 2019).
 15. Member, Search Committee for Executive Vice Chancellor and Provost, University of Nebraska, Lincoln, NE (May 2016 – December 2016).
 16. Member, Nebraska Center for the Prevention of Obesity Diseases, University of Nebraska, Lincoln, NE (February 2015 – present).
 17. Member, IANR Heuermann Lecture Speaker Selection Advisory Committee, University of Nebraska, Lincoln, NE (January 2015 – August 2017).
 18. Member, Chancellor's Commission on the Status of Women, University of Nebraska, Lincoln, NE (August 2013 – May 2017).
 19. Member, Research Advisory Council, University of Nebraska, Lincoln, NE (2013 –2017).
 20. Member, Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE (July 2009 – present).
 21. Member, Center for Drug Delivery and Nanomedicine, University of Nebraska Medical Center, Omaha, NE (August 2008 –present).
 22. Member and Investigator, Center for Nanohybrid Functional Materials, University-of Lincoln, NE (July 2012 – present).
 23. Member, Life Sciences Undergraduate Curriculum Advisory Council, University of Nebraska-Lincoln (August 2010 –2015).
 24. Member, IANR Liaison Committee, University of Nebraska, Lincoln, NE (2013 –2015).
 25. Member, NeSIS Search Committee for Four Functional Coordinators, University of Nebraska System (May 2011 – June 2011).
 26. Member, UNMC Regenerative Medicine Program Steering Committee (2009 –2010).
 27. Member, UNL Chancellor's Life Science Advisory Committee on Instrumentation (2009).

5.7 College Service

5.7.1 Leadership positions on college wide committees

1. Organizer, Biomedical Engineering Seminar Series, College of Engineering, University of Nebraska, Lincoln, NE (Fall 2017 – present).
2. Chair, BME Oversight Committee, College of Engineering, University of Nebraska, Lincoln, NE (November 2015 – 2018).

5.7.2 Membership positions on college wide committees

1. Member, Maxcy Professorship Selection Committee, IANR, University of Nebraska, Lincoln, NE (Fall 2021).

2. Member, Gamma Sigma Delta Outstanding Researcher Selection Committee, University of Nebraska, Lincoln, NE, (2020-2021).
3. Member, University of Nebraska-Lincoln College of Engineering Promotion and Tenure Committee (August 2019 – May 2021).
4. Member, University of Nebraska-Lincoln, Department of Animal Science, Academic Program Review Committee (May 2018).
5. Member, Equipment Task Force, College of Engineering, University of Nebraska, Lincoln, NE (September 2017 – May 2018).
6. Member, Faculty Committee for 5 Year Review of College of Engineering Dean, University of Nebraska, Lincoln, NE (February 2016 – April 2016).
7. Member, College of Engineering - Curriculum and Standards Subcommittee on Continuous Improvement of Teaching and Learning (CITL), University of Nebraska, Lincoln, NE (December 2013 – June 2018).
8. Search Committee for University of Nebraska-Lincoln Biological Process Development Facility Director, UNL (March 2012 – March 2014).
9. Search Committee for Assistant Professor in Molecular Genetics in the Department of Nutrition and Health Sciences, University of Nebraska, Lincoln (Oct. 2011 –December 2011).

5.8 Unit Service

5.8.1 Leadership positions on unit committees

1. Chair, Promotion and Tenure Committee, Department of Biological Systems Engineering (BSE), University of Nebraska, Lincoln (July 2021 – present).
2. Chair, External Relations Committee, BSE, University of Nebraska, Lincoln (July 2019 – present).
3. Chair, CIPA (Continuous Improvement and Program Assessment for ABET) Committee, BSE, University of Nebraska, Lincoln (July 2013 – June 2019).
4. Chair, Search Committee for Biomedical Engineering Faculty Members, BSE, University of Nebraska, Lincoln (October 2015. – February 2016).
5. Chair, Search Committee for Biomedical Engineering Faculty Members, BSE, University of Nebraska, Lincoln (October 2014- March 2015).

5.8.2 Membership positions on unit committees

1. Member (elected), Promotion and Tenure Committee, BSE, University of Nebraska, Lincoln (2018 -- present).
2. Research Committee, BSE, University of Nebraska, Lincoln (2019 -- present).
3. Awards Committee, BSE, University of Nebraska, Lincoln (2019 -- present).
4. Graduate Committee, BSE, University of Nebraska, Lincoln (2014 –2017).
5. Scholarship Committee, Department of Biological Systems Engineering, University of Nebraska, Lincoln (2013 – 2019).
6. Website Oversight Committee, BSE, University of Nebraska, Lincoln (2012 –2016).
7. Member, Facilities Committee, BSE, University of Nebraska, Lincoln (2011 –2013).
8. Member, Safety Committee, BSE, University of Nebraska, Lincoln (2009 –2013).
9. Member, Search Committee for Department Head, BSE, University of Nebraska, Lincoln (2011— 2012).
10. Curriculum Committee, BSE, University of Nebraska, Lincoln, (2009 – 2011).
11. Social Committee, BSE, University of Nebraska, Lincoln (2007 –2011).

5.9 Selected K-12 Outreach Activities

1. Bright Lights Workshop Coordinator for “engineering human body” session (2009 -2019, 2021).
2. LPS (Lincoln Public Schools) Summer Workshop for High School Science Teachers (2008).

3. Nebraska BLAST! Workshop Coordinator for Biomedical Engineering: York, NE (June 2014), Lincoln, NE (July 2015, June 2016), Norfolk, NE (July 2016) and Scottsbluff (July 2017)—two-day long training sessions for after school educators.
4. Nebraska EPSCoR/NCMN Young Scientist Mentor for high school students summer long research experiences (2010 – present): Greta Petersen, Maddy Royse, Emily Laschanzky, Kelly Broad- 2 years, Johanna Schubert- 2 years, Madison Seefeld, Anshul Saraf, Clarissa Tan.

6. TEACHING ACCOMPLISHMENTS

6.1 Research faculty and Postdoctoral researchers mentored/supervised

1. Hamann, Andrew. January 2021 – present.
2. Kasputis, Tadas; May 2014 - June 2015.
3. Jiang, Qiuran; September 2012 – March 2013.
4. Han, Zhongji; October 2011 – June 2013.

6.2 PhD students supervised

1. Kasputis, Tadas (May 2014). *Current Employment:* University of Michigan, Ann Arbor.
2. Martin, Tim (May 2014). *Current Employment:* U.S. BARDA.
3. Farris, Eric (May 2019). *Current Employment:* Adjuvance Technologies, Inc.
4. Mantz, Amy (August 2019). *Current Employment:* Sedia Biosciences Corp.
5. Lampe, Anna (August 2020). *Current Employment:* Adjuvance Technologies, Inc.
6. Hamann, Andrew (December 2020). *Current Employment:* Research Assistant Professor at UNL.
7. Kozisek, Tyler (December 2021). *Current Employment:* Research Assistant at UNL.

6.3 PhD students currently in progress

1. Nguyen, Albert (expected graduation May 2022).
2. Walsh, Sophie (expected graduation, August 2022).
3. Heck, Kari (expected graduation December 2022).
4. Samuelson, Lucas (expected graduation May 2023).
5. Weerakkody, Jamie (expected graduation, May 2024).
6. Biegert, Meghan (expected graduation, May 2025).

6.4 MS students supervised (all funded)

1. Duensing, Beth (May 2010). *Current Employment:* Benchmark Biolabs.
2. Singh, Dipika (December 2010). *Current Employment:* University of Colorado.
3. Regier, Mary (August 2011). *Current Employment:* University of Washington.
4. Taylor (Mills), Jessica (August 2013). *Current Employment:* CHI Health.
5. Sargus-Patino, Catherine (December 2013). *Current Employment:* abbVie.
6. Kelly, Abby (August 2014). *Current Employment:* abbVie.
7. Nguyen, Albert (December 2015). *Current Employment:* PhD Student at UNL.
8. Laughlin, Taylor (August 2016). *Current Employment:* Desmet Ballestra.
9. Mantz, Amy (August 2016). *Current Employment:* Sedia Biosciences Corp.
10. Hamann, Andrew (May 2017). *Current Employment:* Res. Assistant Professor at UNL.

6.5 Undergraduate students supervised in independent research study

1. Saltz, Lydia, Laboratory Volunteer, August 2021 – present.
2. Ather, Marusha. NIH INBRE Scholar, June 2021 – present.
3. Pavonich, Peyton, UNL BME Summer REU, 2021.
4. Seefeld, Madison. Undergraduate Creative Activities and Research Experience (UCARE) student, 2019 – present.
5. Babinchak, Ashley. UNL BME Summer REU, 2019.

6. Townsend, Lou. Undergraduate researcher, 2019 – 2021.
7. Foley, Lily. UNL UCARE/NIH INBRE student, 2018 – 2021.
8. Broad, Kelly. Undergraduate researcher, 2017 – present.
9. Eddy, Bailey. UCARE student, 2017 – 2019.
10. Boren, Matthew. UCARE student, 2017 – 2019.
11. Schietroma, Katherine. UNL Nanohybrids Summer REU, 2018.
12. Miller, Michael. UNL BME Summer REU, 2018.
13. McCarthy, Alec. NIH INBRE Scholar, 2016 – 2018.
14. Mulcahy, Patrick. UNL Nanohybrids Summer REU, 2016.
15. States, Conner. UCARE student, 2017 – 2018.
16. McGill, Keegan. NIH INBRE Summer Scholar, 2016.
17. Helmink, Austin. UCARE student 2016 – 2017. Honors Thesis, 2017.
18. Toner, Anna. Laboratory Volunteer, 2015 – 2016.
19. Lillyman, David. Laboratory Volunteer, 2016 – 2017.
20. Denchfield, Adam. UNL Graduate College Summer REU, 2015.
21. Zellerhoff, Victoria. UNL Graduate College Summer REU, 2015.
22. Verplank, Jordan. UCARE Project, 2014 – 2017.
23. Baher, Fresta. NSF CAREER Project, 2014 – 2017.
24. Vianney Mugaga Ndayisaba, Jean Marie. UNL Graduate College REU, 2014.
25. Paliwal, Shalini. UNL Graduate College Summer REU, 2014.
26. Davidson, Christopher. UCARE Project 2013-2016. Honors Thesis, 2016.
27. Morford, Rachel. NSF CAREER Project, 2013-2015.
28. Paulson, Zachary. UNL Graduate College Summer REU, 2013.
29. Beyersdorf, Jared. UCARE Project 2012-2015. Honors Thesis, 2015.
30. Trejo, Lindsey. UCARE Project 2012-2014.
31. Bader, John. Laboratory Volunteer, 2012-2014.
32. Pieper, Alex. UCARE Project 2012-2014.
33. Nguyen, Cattuong. UCARE Project 2012-2013.
34. Creasy, Olivia. UNL Graduate College Summer REU, 2012
35. Pely, Adam. UNL Graduate College Summer REU, 2011.
36. Krause, Monica. UCARE Project, 2011-2013. Honors Thesis 2013.
37. Borcyk, Tyler. UCARE Project, 2010-2012. Honors Thesis, 2012.
38. Kaufmann, Seely. UCARE Project, 2010-2011.
39. Falter, Skylar. Laboratory Volunteer, 2009-2010.
40. Dudley, Quentin. UCARE Project 2009-2011.
41. Berger, Stephanie. UCARE Project (2008-2010), ARD Honors Thesis Funding (2010-2011). Honors Thesis 2012.
42. Sargus, Catherine. NIH INBRE Scholar, 2009-2011.
43. Lounsbury, Donna. UCARE Project, 2008.
44. Gilkey, Andrea. UCARE Project (2008), NIH INBRE Scholar (2008-2010). Honors Thesis, 2010.
45. Gengenbach, Heidi. UCARE Project (2008-2009), ARD Honors Thesis Funding (2009-2010). Honors Thesis, 2010.

6.6 Participation on Other Student Thesis/Research Committees

Ph.D. Students:

1. Jiang, Qiuran. Department of Textiles, Clothing and Design (Y. Yang, advisor). Ph.D. 2012
2. Furtaw, Michael. Department of Biological Systems Engineering (G. Bashford, advisor). Ph.D. 2013
3. Gonzalez, Daniela. Department of Chemical and Biomolecular Engineering (G. Larsen, advisor). Ph.D. 2016

4. Rodenhausen, K. Brian. Department of Chemical and Biomolecular Engineering (M. Schubert, advisor). Ph.D. 2013
5. Ragusa, Jorge. Department of Chemical and Biomolecular Engineering (G. Larsen, advisor). Ph.D. 2015
6. Sargent, Kevin. Department of Animal Science (A. Cupp, advisor). Ph.D. 2016
7. Booth, Christine. Department of Biochemistry (M. Simpson, advisor). Ph.D. 2017
8. Legband, Nathan. Department of Materials & Mechanical Engineering (B. Terry, advisor). Ph.D. 2017
9. Shradhanjali, Akankshya. Department of Materials and Mechanical Engineering (J. Lim, advisor). Ph.D. 2018
10. Peev, Darin. Department of Electrical Engineering (M. Schubert, advisor). Ph.D. 2018
11. Erickson, Alek. Department of Cell Biology and Anatomy, University of Nebraska Medical Center (A. Dudley, advisor). Ph.D. 2018
12. Rosenthal, Alice. Department of Nanostructured Materials, Leibniz-Institut für Polymerforschung, Dresden e. V., Germany (P. Uhlmann and M. Stamm, advisors). Ph.D. 2018
13. Bowen, Joseph. Department of Chemistry (S. Morin, advisor). Ph.D. 2018
14. Nguyen, Charles. Department of Materials and Mechanical Engineering (J. Turner, advisor), Ph.D. 2019
15. Greer, Sydney. Department of Cell Biology and Anatomy, University of Nebraska Medical Center (A. Dudley, advisor).
16. Meinders, Katie. School of Biological Sciences, UNL (A. Atkin, advisor).
17. Moeller, Michael. Department of Chemical and Biomolecular Engineering (S. Kidambi, advisor).
18. Pekarek, Matt. School of Biological Sciences (E. Weaver, advisor).
19. Miiller, Marissa. Department of Electrical and Computer Engineering (T. Wysocki advisor).

Master's of Science (MS) Students:

1. Curtis, Evan. Department of Biological Systems Engineering (S. Othman, advisor). M.S. 2011.
2. Neal, Karen. Department of Chemical and Biomolecular Engineering (G. Larsen, advisor). M.S. 2013
3. Hatoum, Liana. Department of Materials and Mechanical Engineering (B. Terry, advisor). M.S. 2016.
4. Stapleton, Joseph. Department of Biological Systems Engineering (N. Iverson, advisor). M.S. 2019.
5. Piening, Logan. Department of Biological Systems Engineering (R. Wachs, advisor). M.S. December 2021.

6.7 Conference Proceedings on Teaching: Peer reviewed paper

1. Kelly AM, Lammers A, Jones DD, Stowell R, Hoy R, Curtis E, **Pannier AK**. 2013. Implementation of a “rapid design challenge” in a cross-disciplinary senior capstone course and evaluation of device performance. *American Society for Engineering Education Conference Proceedings*. June 23-26, 2013, Atlanta, GA.

6.8 Course Preparation, Instructor Responsibilities, and Facilities Coordination

1. Developed four new courses:
 - Biomaterials (BSEN 416/816, primary instructor 2008 until 2018)
 - Tissue Engineering (BSEN 418/818, primary instructor 2009 until 2021)
 - Delivery of Nucleic Acids (BSEN 998, primary instructor 2009 until present—5 semesters)
 - Gene Editing (BSEN 998, taught in 2016 and 2019)
2. Co-lead instructor for AGEN/BSEN 470/480 Senior Design I and II (Spring 2010 through Spring 2013; Fall 2015 through Spring 2018—13 semesters)

3. Coordinator for biological teaching lab in Department

6.9 Other Undergraduate Advising and Mentoring

1. College of Engineering NFS S.U.C.C.E.S.S. Scholar program (November 2009 – 2013).
2. Nebraska NIH INBRE Scholars Program Mentor (2008 – present).
3. Faculty Advisor, Nebraska Student Chapter of Society of Women Engineers (2008-2018).

7. PROFESSIONAL DEVELOPMENT

1. Attendee at BMES Innovation, Design and Entrepreneurship Alliance (IDEA) meetings in 2009, 2011, 2013 and 2015 to develop contacts and ideas for teaching design to BME students and curricular topics in general.
2. College of Engineering Leadership Fellows Program (2014-2016), which included leadership training led by UNL administrators, as well as formal training by Joel Dobbs, professional Leadership Coach.
3. Big Ten Academic Leadership Program Fellow, August 2019 – April 2020.
4. Guided by an Executive Coach, Leadership Resources, February 2021 – September 2021.
5. Completed “Culturally Aware Mentoring (iCAM)”, offered through the National Research Mentoring Network (NRMN), 5/2021.
6. University of Nebraska IANR Supervisor Training, 8/2021.