***Jennifer R. Keshwani, Ph.D.***

Ph.D. Oral Biology and Engineering

B.S., M.S. Biological Systems Engineering

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**Current** Associate Professor, Department of Biological Systems Engineering

**Appointment**

**Section 1 Education and Employment History**

**Section 1.1 Education History**

2006-2010: **Interdisciplinary Ph.D.**

 Coordinating Discipline: Oral Biology, Co-Discipline: Engineering

 University of Missouri-Kansas City (UMKC)

 Dissertation title: Evaluation of a Silorane System for use in Stabilization of Traumatic Bone Injuries

 Advisor: Dr. J. David Eick

2003-2005: **Master of Science**

 Agricultural and Biological Systems Engineering

 University of Nebraska-Lincoln (UNL)

 Thesis title: Adaptive Reconstruction of Ultrasonic Signals for Imaging Teeth

 Advisor: Dr. Gregory Bashford

1999-2003: **Bachelor of Science**

 Biological Systems Engineering, emphasis in Biomedical Engineering

 University of Nebraska-Lincoln

**Section 1.2 Employment History**

August 2019 - present **Associate Professor** (80% Extension, 20% Teaching)

 Department of Biological Systems Engineering, University of Nebraska-Lincoln

August 2013 – July 2019 **Assistant Professor** (80% Extension, 20% Teaching)

 Department of Biological Systems Engineering, University of Nebraska-Lincoln

August 2012 – July 2013 **Extension Assistant Professor** (75% Extension, 25% Teaching)

 Department of Biological Systems Engineering, University of Nebraska-Lincoln

June 2010-July 2012: **Adjunct Instructor**

School of Computing and Engineering, University of Missouri-Kansas City

June 2010-July 2012: **Postdoctoral Fellow**

Oral Biology Department, University of Missouri-Kansas City

 Research Area: Development of a Silorane-Based Bone Cement

 Advisor: Dr. J. David Eick

August 2006-May 2010: **Graduate Research Assistant, I.Ph.D. Program,**

 Oral Biology Department, University of Missouri-Kansas City

 Advisor: Dr. J. David Eick

**Section 2 Research Accomplishments**

**Section 2.1 Publication Record**

Section 2.1.1 Peer Reviewed Publications

*†formally published as J. Melander*

1. Speth, C., Ramirez, S., Ibach, R., Lee, D., Sandall, L., Mamo, M., **Keshwani, J.**, Lambe, D., Matkin, G., and Schacht, W. Measuring Change within Next-Generation Agricultural and Natural Resources Professionals. Natural Sciences Education. 2023. 52:2. <https://doi.org/10.1002/nse2.20133>
2. Ingram, E. and **Keshwani, J**. Prairie Protector: student development of systems thinking habits in the context of agroecosystems. Frontiers Education. 2023. 8: 1186270. doi: 10.3389/feduc.2023.1186270
3. Speth C, Ramirez II S, Ibach R, Lee D, Sandall L, Mamo M, **Keshwani J**, Lambe D, Matkin G, and Schacht W. Student Perceptions of Mentoring Practices During Undergraduate Research Experiences. NACTA. 2022. 66; 93-102. <https://www.nactateachers.org/index.php/vol66-2022/3226-student-perceptions-of-mentoring-practices-during-undergraduate-research-experiences>  (10% contribution)
4. Ingram, E, and **Keshwani, J**. Nebraska School Gardens and the Potential for Science, Technology, Engineering and Math Learning. Journal of Extension. 2020. 58(6). (20% contribution)
5. Thompson, CJ, Luck, LM, **Keshwani, JR**, Pitla, SK, and Karr LK. Location on the body of a Wearable Accelerometer Affects Accuracy of Data for Identifying Equine Gaits. Journal of Equine Veterinary Science. 2018. 63; 1-7.

<https://doi.org/10.1016/j.jevs.2017.12.002> (15% contribution)

1. Iverson, N., **Keshwani, J.**, Pannier, A., and Plautz S. Engineering Nanoparticles for the Body. *Science Scope*. 2018. 41(7); 43-52.

<http://www.nsta.org/store/product_detail.aspx?id=10.2505/4/ss18_041_07_43> (40% contribution)

1. **Keshwani, J.** and Curtis, E. Motivating Undergraduate Engineering Students through Real-World Applications of Biological Materials. *Transactions of the ASABE*. 2017. 60(5); 1421-1427.

<https://doi.org/10.13031/trans.12056> (95% contribution)

1. **Keshwani, J.** and Adams, K. Cross-Disciplinary Teamwork and Service Learning through Elementary STEM Clubs. *International Journal for Service Learning in Engineering.* 2017. 12(1); 41-61.

<https://doi.org/10.24908/ijsle.v12i1.6664> (85% contribution)

1. Brandt, M., Forbes, C., and **Keshwani, J.** Exploring Elementary Students’ Scientific Knowledge of Agriculture Using Evidence-Centered Design. *Journal of Agricultural Education*. 2017. 58(3); 134-149.

<https://doi.org/10.5032/jae.2017.03134> (25% contribution)

1. Yao X, Carleton SM, Kettle AD, Phillips CL, **Melander JR**, and Wang Y. Gender-dependence of bone structure and properties in adult osteogensis imperfecta murine model. *Annals of Biomedical Engineering.* 2013. 41(6); 1139-1149.

<https://doi.org/10.1007/s10439-013-0793-7> (10% contribution)

1. Walker MP, Alderman N, Petri C, **Melander J**, and McGuire J. Correlation of impression removal force with elastomeric impression material rigidity and hardness. *J Prosthodont* 2013. 22(5); 362-366.

<https://doi.org/10.1111/jopr.12011> (15% contribution)

1. Eick JD, Barragan-Adjemian C, Rosser J, **Melander JR**, Dusevich V, Weiler RA, Miller BD, Kilway KV, Dallas MR, Bi L, Nalvarte EL, and Bonewald LF. Silorane resin supports proliferation, differentiation and mineralization of MLO-A5 bone cells *in vitro* and bone formation *in vivo*. *J Biomedical Materials Research Part B*. 2012. 100B; 850-861.

<https://doi.org/10.1002/jbm.b.32649> (15% contribution)

1. **Melander JR,** Weiler RA, Miller BD, Schuman T, Kilway KV, Day DE, Velez M, and Eick JD. Estimation of properties of a photoinitiated silorane-based composite with potential for orthopaedic applications. *J Biomedical Materials Research Part B*. 2012. 100B(1); 163-169.

<https://doi.org/10.1002/jbm.b.31934> (75% contribution)

1. **Melander JR**, Dunn WP, Link M, Wang Y, Xu C, and Walker MP. Comparison of flexural properties and surface roughness of nanohybrid and microhybrid dental composites. *General Dentistry*. 2011. 59(5). 342-347.

<http://europepmc.org/abstract/med/22313818> (25% contribution)

1. Velez M, He Y, Day DE, Schuman TP, Kilway KV, **Melander JR**, Weiler RA, Miller BD, Nalvarte EL, and Eick JD. Processing of yttrium aluminosilicate (YAS) glasses for dental composites. *Ceramica*. 2011. 57(341); 1-9.

<http://dx.doi.org/10.1590/S0366-69132011000100001> (10% contribution)

Section 2.1.2 Peer Reviewed Publications Accepted

None

Section 2.1.3 Peer Reviewed Publications Submitted/In-review

1. Ingram, E., Wonch-Hill, T., Harshbarger, D., and **Keshwani, J**. Improving Elementary Pre-Service Teachers’ Science Teaching Self-Efficacy through Garden-Based Technology Integration. Education Sciences.

Section 2.1.4 Books and Book Chapters

1. Barker, B, Nugent, G, Grandgenett, N, **Melander, J**, Nelson, CA, & Leduc-Mills, B. (2016) Developing an Elementary Engineering Education Program through Problem-Based Wearable Technologies Activities. Book Chapter, Handbook of Research on Wearable and Mobile Technologies in Education, J. Holland (Ed.), IGI Press.

<https://www.igi-global.com/chapter/developing-an-elementary-engineering-education-program-through-problem-based-wearable-technologies-activities/149613> (15% contribution)

DOI: 10.4018/978-1-5225-0069-8.ch014

1. Dusevich VM, **Melander JR**, and Eick JD. (2013). SEM in dental research. In Heide Schatten (Ed.), *Scanning Electron Microscopy for the Life Sciences* (pp 211-235). Cambridge, UK: Cambridge University Press.

<https://doi.org/10.1017/CBO9781139018173.014> (20% contribution)

Section 2.1.5 Conference Proceedings: Peer Reviewed Publications

1. Han, H., Palala, H., **Keshwani, J**., and Keshwani, D. (2023) Community Building through Technology in a Biological Systems Engineering Course. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Baltimore, MD. <https://peer.asee.org/43245>
2. Wu, X. B., Dixon, S. T. S., Goodman, L., Ingram, E., **Keshwani, J**., Macik, M., Poling, N., Treadwell, M., Wied, J., & Yockers, B. (2023, February 12–16). Developing agents of change and innovations in secondary and higher education to promote rangeland literacy. In X. B. Wu & L. Goodman (Chairs), Cultivating future rangeland professionals and rangeland-literate public: An integrated cross-boundary approach of the Prairie Project [Symposium]. 2023 SRM Annual Meeting, Boise, ID, United States. <https://rangelands.org/wp-content/uploads/2023/02/SRM-Annual-Meeting-Program_Final.pdf>
3. Ingram E, **Keshwani J**, Keshwani D, Lunn C, and Binfield J. (2022) Prairie Protector: Systems thinking and STEM-informed decision-making in agroecosystems through game-based learning. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Minneapolis, MN. <https://peer.asee.org/40545> (30%)
4. Ingram E, **Keshwani J**, Mittelstet T, and Thomas J. (2020) Garden TOOLS: Technology-rich Agricultural Engineering Opportunities in Outdoor Learning Spaces. Proceedings of American Society for Engineering Education Annual Conference and Exposition. Virtual On line. <https://peer.asee.org/34699> (30%)
5. Ibach R, **Keshwani J**, Keshwani D, Everhart S, and Sandall L. (2020) Work in Progress: Participants of the Cultivate ACCESS Program. Proceedings of American Society for Engineering Education Annual Conference and Exposition. Virtual On line. <https://peer.asee.org/35676> (30%)
6. Rice N, **Keshwani J**, and Keshwani D. (2020) Role of Agricultural Simulation Games to Promote Youth-Adult Discussions Related to Agricultural Sustainability. Proceedings of American Society for Engineering Education Annual Conference and Exposition. Virtual On line. <https://peer.asee.org/35167> (20%)
7. Golick DA, **Keshwani J**, Wallner C, and Kuck J. (2019). BugBots: Blending entomology and engineering to teach about insect form, function, and locomotion. Entomology Society of America Member Symposia, 2019, St. Louis, MO. <https://esa.confex.com/esa/2019/meetingapp.cgi/Paper/144925>
8. Barker B, Valentine D, Grandgenett N, Keshwani J, and Burnett A. (2018). Using Virtual Reality and Telepresence Robotics in Making. In Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (pp. 564-568). Las Vegas, NV, United States. <https://www.learntechlib.org/p/185010/>
9. Rice N, Guru A, **Keshwani J**, and Keshwani DR. (2018). Comparison of game-based learning and traditional lecture approaches to improve student engagement and knowledge transfer in STEM education. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Salt Lake City, Utah.

<https://www.asee.org/public/conferences/106/papers/23664/view> (20%)

1. Keshwani DR, Anderson RD, **Keshwani JR,** Subbiah J, Guru A, and Rice N**.** (2017). Educational immersive simulation game design to enhance understanding of corn-water-ethanol-beef system nexus. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Columbus, Ohio.

<https://peer.asee.org/28198> (20% contribution)

1. **Keshwani JR,** and Curtis E**.** (2017). To change the world: Student motivation for pursuing a degree in agricultural or biological engineering. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Columbus, Ohio.

<https://peer.asee.org/29031> (75% contribution)

1. **Keshwani JR,** Adams KA**.** (2016). Building Teaching Collaborations across Disciplines. Proceedings of American Society for Engineering Education Annual Conference and Exposition, New Orleans, Louisiana.

<https://peer.asee.org/26414> (75% contribution)

1. **Keshwani, J.**, Barker, B., Nugent, G., & Grandgenett, N. (2016). WearTec: Empowering Youth to Create Wearable Technologies. *In Proceedings of International Conference on Advanced Learning Technologies 2016* (pp. 498-500).

<https://doi.org/10.1109/ICALT.2016.143> (50% contribution)

1. Nugent, G., Barker, B., Grandgenett, N., **Melander, J.** & Nelson, C. (2015). Wearable Technologies to Promote STEM Learning and Attitudes. In *Proceedings of E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2015* (pp. 689-694). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

<https://www.learntechlib.org/p/152103/> (20% contribution)

1. Barker, B., **Melander, J.**, Grandgenett, N. & Nugent, G. (2015). Utilizing Wearable Technologies as a Pathway to STEM. In D. Slykhuis & G. Marks (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2015* (pp. 1770-1776). Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).

<https://www.learntechlib.org/noaccess/150591/> (20% contribution)

1. Adams KA, **Keshwani JR.** (2015). Preparing Pre-Service Teachers to Make Connections between Science and Engineering Concepts through Teamwork with Engineering Students. Proceedings of American Society for Engineering Education Annual Conference and Exposition, Seattle, Washington.

<https://peer.asee.org/24585> (60% contribution)

Section 2.1.6 Conference Proceedings: Not Peer Reviewed

1. Thompson CJ, Luck L, **Keshwani J,** & Pitla S. (2017). Effect of sensor placement on acceleration data to monitor equine activity. Journal of Equine Veterinary Science. 52; 64-72. (20% contribution)
2. **Melander JR,** Weiler RA, Miller BD, Kilway KV, and Eick JD. Handling Properties and Exothermicity of Chemically Initiated Silorane Biomaterial. 89th Annual Meeting & Exhibition of the International Association for Dental Research. J Dent Res 90 Spec Issue: 3540, 2011(70% contribution)
3. Walker MP, Mitts DA, Shin TP, **Melander JR**, and McDonald SK. Effect of Elastomeric Impression Material Stiffness/Hardness on Impression Removal Difficulty. 89th Annual Meeting & Exhibition of the International Association for Dental Research. J Dent Res 90 Spec Issue: 392, 2011 (25% contribution)
4. Weiler RA, **Melander JR**, Miller BD, Kilway KV, Bonewald LF, and Eick JD. Physical Properties of Filled Chemically Initiated Silorane Biomaterials. 89th Annual Meeting & Exhibition of the International Association for Dental Research. J Dent Res 90 Spec Issue: 1186, 2011(40% contribution)
5. Miller BD, Weiler RA, **Melander JR**, Nalvarte EL, Kilway KV, Bonewald LF, and Eick JD. Biocompatibility of a Chemically Initiated Silorane Resin. 89th Annual Meeting & Exhibition of the International Association for Dental Research. J Dent Res 90 Spec Issue: 2514, 2011 (40% contribution)
6. **Melander J,** Ghotbi A, Thiagarajan G, McDonald S, and Walker MP. Assessment of Modifications to Notched Triangular Prism Method. J Dent Res 89 Spec Issue: 1234, 2010. (75% contribution)
7. **Melander J**, Weiler RA, Miller B, Kilway K, and Eick JD. Flexural Properties of Mixed-Initiator Silorane Bone Stabilizer. J Dent Res 89 Spec Issue: 1107, 2010. (75% contribution)
8. Kilway, KV, Weiler RA, **Melander J**, Miller BD, Schuman T, Velez M, Day D, Bonewald, L, and Eick JD. Investigation of Mixed Initiated Cationic Polymerization of a Silorane Resin. J Dent Res 89 Spec Issue: 1038, 2010. (25% contribution)
9. Eick JD, Weiler RA, Sylvester D, Hendricks K, **Melander JR**, and Kilway KV. Optimization and Investigation of Acid-Catalyzed Polymerization of SilMix®. J Dent Res 88 Spec Issue: 2412, 2009. (20% contribution)
10. **Melander JR,** Weiler RA, Kilway KV, and Eick JD. Properties of chemically initiated silorane bone stabilizers. J. Dent Res 88 Spec Issue: 2562, 2009. (80% contribution)
11. **Melander JR,** Walker MP, Fricke B and Dunn, WP. Development/Preliminary Validation of a Modified Notchless Triangular Prism Protocol. J Dent Res 87 Spec Issue: 0132, 2008. (80% contribution)
12. **Spencer P,** Ye Q, Wang Y, Walker MP, Misra A, Marangos O, Kostoryz EL, **Melander JR**, and Gorman N. Structure/Property Relationships in Environmentally Stressed Dentin Adhesives. J Dent Res 86 Spec Issue: 0117, 2007. (10% contribution)
13. **Ye Q,** Wang Y, **Melander JR**, Gorman N, Marangos O, Misra A, and SpencerP. **Water-compatible Photoinitiators and Nano-Phase Separated Dentin Adhesives. J Dent Res 87 Spec Issue: 2009, 2007.** (20% contribution)
14. DiMartino A, Doné K, Judkins T, Morse J, **Melander J**, Oleynikov D, and Hallbeck S. Ergonomic laparoscopic tool handle design. *Human Factors and Ergonomics Society Annual Meeting Proceedings*. 2004. 48(12); 1354-1358.  (20% contribution)
15. **Bashford GR,** Morse JL and **Melander JR**. Novel Fusion Algorithms for Medical Ultrasound Tomography. Proc. SPIE 5559, 392, 2004. (5% contribution)

Section 2.1.7 Conference Presentations

1. **Keshwani, J**., Ingram, E., and Keshwani, D. (2023) Prairie Protector: Systems thinking through game-based learning. Oral Presentation, Institute of Biological Engineering Annual Conference, Ames, IA. April 2023.
2. \*Ingram, E, \***Keshwani, J**, \*Keshwani, D, Lunn, C, and Binfield J. (2022) Prairie Protector: Systems thinking and STEM-informed decision-making in agroecosystems through game-based learning. Oral Presentation, 129th ASEE Annual Conference & Exposition, Minneapolis, MN. June 2022.
3. Kaslon, L, Varner D, **Keshwani J**, Pusey R, and Mondock T. (2021) The Trust Edge Experience in Extension. Workshop. NAEPSDP Annual Conference, Virtual Online. December 2021.
4. \*Ingram E, **Keshwani J**, Mittelstet T, and Thomas J. (2020) Garden TOOLS: Technology-rich Agricultural Engineering Opportunities in Outdoor Learning Spaces. Oral Presentation, 127th ASEE Annual Conference & Exposition, Virtual Online. June 2020.
5. \*Ibach R, **Keshwani J**, Keshwani D, Everhart S, and Sandall L. (2020) Work in Progress: Participants of the Cultivate ACCESS Program. Oral Presentation, 127th ASEE Annual Conference & Exposition, Virtual Online. June 2020.
6. \*Rice N, **Keshwani J**, and Keshwani D. (2020) Role of Agricultural Simulation Games to Promote Youth-Adult Discussions Related to Agricultural Sustainability. Oral Presentation, 127th ASEE Annual Conference & Exposition, Virtual Online. June 2020.
7. **Keshwani J**, \*Ibach R, Bray-Obermeyer J, Everhart S, Keshwani D, and Sandall L. Cultivate ACCESS: Empowering students to pursue agSTEM through mentor relationships. Oral Presentation, 2019 NACTA Conference, Twin Falls, ID. June 2019.
8. \*Rice N, Guru A, **Keshwani J**, and Keshwani DR. Comparison of game-based learning and traditional lecture approaches to improve student engagement and knowledge transfer in STEM education. Oral Presentation, 125th ASEE Annual Conference & Exposition, Salt Lake City, UT. June 2018.
9. Nugent G, Barker B, Grandgenett N, Nelson C, **Keshwani J**, and \*Valentine D. The Effectiveness of E-Textiles Technologies to Promote STEM Learning and Attitudes. Oral Presentation. Hawaii International Conference on Education, Honolulu, HI, January 2018.
10. **\*Keshwani JR**, Keshwani DK, and Curtis E. Student Identification of Challenges and Successes in Agricultural and Biological Engineering. Oral Presentation, ASABE 2017 Annual International Meeting, Spokane, WA, July 2017.
11. **\*Keshwani JR** and Curtis E. To Change the World: Student Motivation for Pursuing a Degree in Agricultural or Biological Engineering. Oral Presentation, 124th ASEE Annual Conference & Exposition, Columbus, OH June 2017.
12. Keshwani DR, \*Anderson RD, **Keshwani J,** Subbiah J, Guru A, and \*Rice NC. Educational Immersive Simulation Game Design to Enhance Understanding of Corn-Water-Ethanol-Beef System Nexus. Oral Presentation, 124th ASEE Annual Conference & Exposition, Columbus, OH June 2017.
13. \*Thompson CJ, Luck L, **Keshwani J,** & Pitla S. (2017). Effect of sensor placement on acceleration data to monitor equine activity. 2017 Equine Science Symposium. Minneapolis, MN, May 2017.
14. Barker B, Valentine D, O’Connor A, and **\*Keshwani JR**. WEARTEC – E-Textiles and Wearable Technologies. Poster Presentation, STEM Education Research Retreat, Lincoln, NE, October 2016.
15. \*Barker B, **Keshwani J**, Nugent G, and Grandgenett N. WearTec: Empowering Youth to Create Wearable Technologies. 16th IEEE International Conference on Advanced Learning Technologies. Austin, TX. July 2016.
16. **\*Keshwani JR** and Barker B. Wearable Technologies as a Pathway to STEM. Workshop, STEM Think Tank and Conference, Nashville, TN, July 2016.
17. **\*Keshwani JR** and Curtis E.Empowering Undergraduate Engineering Students to Connect Laboratory Experiences with Industry Applications through Fictional Clients. Oral Presentation, ASABE 2016 Annual International Meeting, Orlando, FL, July 2016.
18. **\*Keshwani JR,** and Adams KA. Building Teaching Collaborations across Disciplines. Oral Presentation, 123rd ASEE Annual Conference & Exposition, New Orleans, LA, June 2016.
19. **\*Keshwani JR**, Klein-Gardner SS, Carrico C, & Yang S. Teachers Talking about Engineering: How to incorporate engineering in K-12 classrooms. Workshop, 123rd ASEE Annual Conference & Exposition, New Orleans, LA, June 2016.
20. **\*Keshwani JR, \***Brandt M., & Forbes C. Translating Applied STEM Research into Secondary Science (TASRs). Oral Presentation, National Ag in the Classroom Conference, Litchfield Park, AZ, June 2016.
21. \*Brandt M, Forbes CT, & **Keshwani J.** Operationalizing Applied Science: Developing Measures for Elementary Students’ Understanding of STEM Dimensions of Food Systems. Oral Presentation, 2016 NARST Annual International Conference, Baltimore, MD, April 2016.
22. **\*Keshwani JR**, and \*Adams KA. Cross-Disciplinary Outreach Activity to Promote Development of Communication Skills in Engineering Students. Poster Presentation, STEM Education Research Retreat, Lincoln, NE, October 2015.
23. \*Adams KA, **Keshwani JR.** Preparing Pre-Service Teachers to Make Connections between Science and Engineering Concepts through Teamwork with Engineering Students. Oral Presentation, 122nd ASEE Annual Conference & Exposition, Seattle, WA, June 2015.
24. **\*Melander JR,** Curtis E, Adams KA, and Arthurs L. “A Cross-Disciplinary, Service Learning-Based Approach to Enhance Communication Skills.” Oral Presentation, ASABE 2014 Annual International Meeting, Montreal, QC, CA, July 2014.
25. **\*Melander JR,** Holmes RR, Yao X, Weiler RA, and Eick JD. “Measuring Strain in Bone Cement with Carbon Nanotubes.” Poster Presentation, ASME 2012 Summer Bioengineering Conference, Fajardo, PR, June 2012.
26. **\***Holmes RR, **Melander JR,** Weiler RA, Schuman TS, Kilway KV, and Eick JD. “Polymerization Stress and the Influence of TOSU Addends on Methacrylate Composites.” Poster Presentation, ASME 2012 Summer Bioengineering Conference, Fajardo, PR, June 2012.
27. **\*Melander JR,** Holmes RR, Weiler RA, Miller BD, Kilway KV, Schuman TS, and Eick JD. “TOSU Addends Maintain Mechanical Properties while Decreasing Polymerization Stress.” Poster Discussion Presentation, 41st Annual Meeting & **Exhibition of the** American Association of Dental Research, Tampa, FL, March 2012.
28. **\*Melander JR**, Weiler RA, Miller BD, Kilway KV, and Eick JD. “Improving the Strength of a Silorane Bone Cement.” Poster Presentation, Missouri Musculoskeletal Conference, July 2011.
29. **\*Melander JR**, Weiler RA, Miller BD, Kilway KV, and Eick JD. “Flexural Properties of Silorane Bone Cement.” Poster Presentation, ASME 2011 Summer Bioengineering Conference, Farmington, PA, June 2011.
30. **\*Melander JR,** Weiler RA, Miller BD, Kilway KV, and Eick JD. “Handling Properties and Exothermicity of Chemically Initiated Silorane Biomaterial.” Poster Presentation, 89th Annual Meeting & Exhibition of the International Association for Dental Research, San Diego, CA, March 2011.
31. \*Walker MP, Mitts DA, Shin TP, **Melander JR**, and McDonald SK. “Effect of Elastomeric Impression Material Stiffness/Hardness on Impression Removal Difficulty.” Oral Presentation, 89th Annual Meeting & Exhibition of the International Association for Dental Research, San Diego, CA, March 2011.
32. \*Weiler RA, **Melander JR**, Miller BD, Kilway KV, Bonewald LF, and Eick JD. “Physical Properties of Filled Chemically Initiated Silorane Biomaterials.” Poster Presentation, 89th Annual Meeting & Exhibition of the International Association for Dental Research, San Diego, CA, March 2011.
33. \*Miller BD, Weiler RA, **Melander JR**, Nalvarte EL, Kilway KV, Bonewald LF, and Eick JD. “Biocompatibility of a Chemically Initiated Silorane Resin.” Poster Presentation, 89th Annual Meeting & Exhibition of the International Association for Dental Research, San Diego, CA, March 2011.
34. \*Kilway KV, Weiler RA, **Melander JR**, Miller BD, Bi LX, Schuman TP, Day DE, Bonewald LF, and Eick JD. “Development of a novel biomaterial for orthopaedic applications.” Oral Presentation, 2010 Midwest Regional Meeting of the American Chemical Society, Wichita, KS, October 2010.
35. **\*Melander JR**, Weiler RA, Miller BD, Kilway KV, and Eick JD. “Model of Silorane Composite for Bone Stabilization Application.” Oral Presentation, ASME 2010 Summer Bioengineering Conference, Naples, FL, June 2010.
36. **\*Melander JR,** Ghotbi A, Thiagarajan G, McDonald S, and Walker MP. “Assessment of Modifications to Notched Triangular Prism Method.” Oral Presentation, **39th Annual Meeting & Exhibition of the** American Association of Dental Research, Washington, DC, March 2010.
37. **Melander JR**, Weiler RA, Miller B, Kilway K, and \*Eick JD. “Flexural Properties of Mixed-Initiator Silorane Bone Stabilizer.” Poster Presentation, **39th Annual Meeting & Exhibition of the** American Association of Dental Research, Washington, DC, March 2010.
38. \*Kilway, KV, Weiler RA, **Melander JR**, Miller BD, Schuman T, Velez M, Day D, Bonewald, L, and Eick JD. “Investigation of Mixed Initiated Cationic Polymerization of a Silorane Resin.” Poster Presentation, **39th Annual Meeting & Exhibition of the** American Association of Dental Research, Washington, DC, March 2010.
39. \***Melander JR**, Weiler RA, Miller B, Kilway KV, and Eick JD. “Properties of Chemically Activated Silorane Polymers for Use as Bone Stabilizers.” Poster Presentation, 2009 Biomedical Engineering Society Annual Fall Meeting, Pittsburgh, PA, October 2009.
40. Eick JD, Weiler RA, Sylvester D, Hendricks K, **Melander JR**, and \*Kilway KV. “Optimization and Investigation of Acid-Catalyzed Polymerization of SilMix®.” **Poster Presentation, 86th Annual Meeting & Exhibition of the International Association for Dental Research, Miami, FL, April 2009.**
41. \***Melander JR**, Weiler RA, Kilway KV, and Eick JD “Properties of chemically initiated silorane bone stabilizers.” **Poster Presentation, 86th Annual Meeting & Exhibition of the International Association for Dental Research, Miami, FL, April 2009.**
42. \***Melander JR**, Walker MP, Fricke B and Dunn, WP. “Development/Preliminary Validation of a Modified Notchless Triangular Prism Protocol.” Oral Presentation, **37th Annual Meeting & Exhibition of the American Association for Dental Research, Dallas, TX, April 2008.**
43. \*Spencer P, Ye Q, Wang Y, Walker MP, Misra A, Marangos O, Kostoryz EL, **Melander JR**, and Gorman N. “Structure/Property Relationships in Environmentally Stressed Dentin Adhesives**.” Oral Presentation, 36th Annual Meeting & Exhibition of the International Association for Dental Research, New Orleans, LA, March 2007.**
44. \*Ye Q, Wang Y, **Melander JR**, Gorman N, Marangos O, Misra A, and SpencerP. **“Water-compatible Photoinitiators and Nano-Phase Separated Dentin Adhesives.” Poster Presentation, 36th Annual Meeting & Exhibition of the International Association for Dental Research, New Orleans, LA, March 2007.**
45. **\*Melander JR and** Bashford **GR. “Ultrasonic Detection of Tooth Fracture.” Oral Presentation, Heartland Biomedical Engineering Symposium, Omaha, NE, April 18, 2005.**
46. **\*Bashford GR,** Morse **JL, and Melander JR. “Novel fusion algorithms for medical ultrasound tomography.” 49th SPIE Annual Meeting: Advanced Signal Processing Algorithms, Architectures, and Implementations. Denver, CO, August 2004.**

**\*indicates presenter**

Section 2.1.8 Invited Talks

1. Prairie Protector Game Development. Girls Inc., Lincoln, NE. July 31, 2023.
2. How Game-Based Learning Tackles the Green Glacier. Boundary-Spanning Seminar Series – Center for Environmentally Beneficial Catalysis, University of Kansas. Lawrence, KS. February 16, 2023.
3. We Are Growable: Developing systems thinking through games. Agronomy and Horticulture Seminar Series – UNL. Lincoln, NE. September 23, 2022.
4. Prairie Protector Game Development. Girls Inc., Lincoln, NE. July 25, 2022.
5. Prairie Protector, RFD TV – Live Shot. Lincoln, NE, July 26, 2022.
6. Game-based learning to support systems thinking and agroecosystem sustainability. Nebraska 4-H Inservice, Lincoln, NE. March 23, 2022.
7. Game-Based Learning to Support Systems Thinking. Elevating Conservation: Empowering + Connecting Nebraska Nature + Science Educators, virtual, January 18-19, 2022.
8. Staying Connected During a Season of Social Distancing. PD Power Hour, Nebraska Extension. April 3, 2020
9. Cultivating Science Literacy through Wonder and Curiosity. Family Science and Ag Field Day at Haskell Ag Lab, July 24, 2019.
10. Science Literacy: Empowering Decision Makers and Problem Solvers. BSE Colloquium. Department of Biological Systems Engineering, University of Nebraska-Lincoln, February 21, 2018.
11. What Does Agricultural Science Literacy Bring to the Table? Growing Nebraska Summit. Lincoln, NE. November 8. 2017.
12. Engaging Female Students in STEM. Altria Grow Grant Webinar. Online. May 17, 2017.
13. Engineering Empowerment: Science Literacy through Engineering Design. Agronomy and Horticulture Seminar Series – UNL. Lincoln, NE. February 3, 2017.
14. STEM Education through Agricultural Sustainability. Ag Builders of Nebraska meeting. Lincoln, NE. January 11, 2017.
15. Engineering Empowerment: Science Literacy through Engineering Design. SCICOMM 2016, University of Nebraska-Lincoln, Lincoln, NE. September 24, 2016.
16. Biomedical Engineering as a Vehicle for Science Literacy. Surgery Research Forum. University of Nebraska Medical Center. Omaha, NE. August 10, 2016.
17. Promoting Science Literacy through Agricultural and Biological Engineering. Department of Biological and Agricultural Engineering, Kansas State University. Manhattan, KS. February 26, 2016.
18. K-12 Engineering and Electronic Valentines. Aurora HuskeyEd Camp. Aurora, NE. February 13, 2015.
19. Breaking Bones & K-12 Engineering. Teacher training day at ESU #2. Fremont, NE. February 12, 2015.
20. Teaching Coding and Engineering through Wearable Technologies. Nebraska Information Technology Commission. Lincoln, NE. January 31, 2015
21. The Importance of Science Literacy in Society. Nebraska Citizens for Science Forum. Lincoln, NE. January 15, 2015
22. K-12 Engineering. LINKS (Leadership in Nebraska KICKS (Keep Improving Content Knowledge and Skills)) meeting. Omaha, NE. July 22, 2014.
23. More Food for Everyone: Precision Agriculture’s Use of GIS. Broadband Connecting Nebraska. Kearney, Nebraska. October 16, 2013
24. The Diagnosis and Treatment of Biopolymer Stress. Oral Biology Seminar, Department of Oral Biology, School of Dentistry, University of Missouri-Kansas City, February 15, 2012
25. Silorane Composites for Orthopaedic Applications. Oral Biology Seminar, Department of Oral Biology, School of Dentistry, University of Missouri-Kansas City, June 1, 2011
26. Stabilization of Bone Fractures using a Silorane Composite. Alumni Presentation, Department of Biological Systems Engineering, University of Nebraska-Lincoln, April 7, 2010

Section 2.1.9 Other Publications

1. **Keshwani J.** Building community in a virtual space. March 2018. <http://vrmakerspace.org/blog/2018/03/09/building-community/>
2. **Keshwani J.** What motivates students to pursue an engineering career? Click2SciencePD blog post. February 2018. <http://www.click2sciencepd.org/blog-post/what-motivates-students-to-pursue-an-engineering-career>
3. **Melander J**. How to make sense of inconsistencies in science. Prairie Fire. September 2014. <http://www.prairiefirenewspaper.com/2014/09/how-to-make-sense-of-inconsistencies-in-science>
4. **Melander J**. Testing and Re-Testing. Click2SciencePD blog post. July 2014. <http://www.click2sciencepd.org/blog-post/testing-and-re-testing>

**Section 2.2 Grantsmanship Record**

Section 2.2.1 Internally Funded Research Grants

1. $39,226. J. Hay, and **J. Keshwani**. Microgrid Mastermind: The Quest for Reliable Electricity. Nebraska Center for Energy Sciences Research. 2024.
2. $150,000. H. Akin, T. Gilmore, M. Harner, and **J. Keshwani**. Pilot and Assessment of Cyberinfrastructure for Image-based Environmental Monitoring and Education. University of Nebraska Collaboration Initiative. 2023-2025.
3. $150,000. Y. Ge, **J. Keshwani**, et al. SPACE2: Space, Policy, Agriculture, Climate, and Extreme Environment. Grand Challenges Catalyst Competition – Planning Grants. 2022-2023.
4. $15,981. **J. Keshwani**, E. Ingram, P. Bishop. Beyond the Box – CASNR Edition. 2021-2022. (my share: 100%)
5. $19,494. A. Guru, H. Yu, D. Bastola, M. De Guzman, **J. Keshwani**, K. Roche, D. Nielson, M. Pegg, J. Cole, and J. Subbiah. Systems Thinking for Sustainable Future – Undergraduate Community-Based Research. Rural Futures Institute. 2017-2019. (my share: $0)
6. $5,000. Ndao, S. and **J. Keshwani**. TeckTal – An online STEM literacy platform for African students and educators. IANR Office of Global Engagement International Impact Award, University of Nebraska-Lincoln. 2016. (my share: $2,000)
7. $385,463. Forbes, C. and **J. Keshwani**. Development and Testing of a 3rd-Grade Life Science Unit to Foster 3rd-grade Students' Agricultural Literacy and Life Science Learning. ARD Hatch Multistate Research Enhanced, University of Nebraska-Lincoln. 2015-2018. (my share: $0)
8. $10,000. Borck, H., K. Elsen, E. Janning, **J. Keshwani**, and L. Luck. Ag-Citing Adventure Mobile App/Website. UNL Extension, University of Nebraska-Lincoln, 2014-2015. (my share: $0)
9. $7,000. Weitzenkamp, D., L. Chichester, C. Reimers-Hild, C. Forbes, and **J. Keshwani**. Big RED Talks. UNL Extension, University of Nebraska-Lincoln, 2013-2015. (my share: $0)
10. $10,000. Barker, B. and **J. Keshwani**. Wearable Technologies Project. Research Council Faculty Seed Grants, University of Nebraska-Lincoln. 2013-2014. (my share: $1,000)

Section 2.2.2 Externally Funded Research Grants

1. $200,000. **J. Keshwani**, E. Ingram, L. Sandall, J. Obermeyer, D. Keshwani, and M. Hayes. Cultivate Resilience. USDA-NIFA. 2023-2026.
2. $749,825**. J. Keshwani**, E. Ingram, L. Sandall, D. Keshwani, E. Blankenship, T. Gilmore, H. Akin, and M. Emery. Cultivate ACCESS to Data Science in Agriculture. USDA-NIFA. 2023-2027.
3. $99,795. R. Herpel, **J. Keshwani**, G. Panther, and D. Snow. Know Your Well High School Curriculum Development. EPA. 2023-2025
4. $80,000. **J. Keshwani**, L. Sandall, D. Keshwani, S. Everhart, and J. Obermeyer. Cultivate ACCESS Diversity Fellows Program. CHS Foundation. 2020-2021

*SAP WBS Account #: 26-6321-0446-001*

1. $44,500. **J. Keshwani**, E. Ingram and Brandy VanDeWalle. Garden TOOLS for Corn. Nebraska Corn Board. 2020-2021

*SAP WBS Account #: 26-6321-0440-001*

1. $17,835. D. Golick, **J. Keshwani**, and T. Weissling. Milkweed in the Classroom. Nebraska Environmental Trust. 2019-2020

*SAP WBS Account #: 26-6328-0309-001*

1. $206,667. D. Twidwell, **J. Keshwani**, Enhancing Livestock Production from Rangelands in the Great Plains. US Department of Agriculture-NIFA. 2019-2024.

*SAP WBS Account #: 26-6222-0954-001*

1. $94,387. **J. Keshwani**, J. Bray-Obermeyer, S. Everhart, D. Keshwani, and L. Sandall. Cultivating ACCESS: Agriculture Career Communities to Empower Students in STEM. US Department of Agriculture-NIFA. 2017-2020.

*SAP WBS Account #: 25-6321-0365-001*

1. $299,539. Barker, B., S. Farritor, and **J. Keshwani.** Nebraska Innovative Maker Co-Laboratory (NiMC). National Science Foundation. 2017-2018.

*SAP WBS Account #: 25-6329-0138-001*

1. $50,000. Barker, B., **J. Keshwani**, C. Nelson, D. Valentine, A. Zimbroff. 2017 National Youth Science Day: Smart Fitness. National 4-H Council. 2017.

*SAP WBS Account #: 26-6329-0131-001*

1. $300,000. Mamo, M., **J. Keshwani**, D. Lambe, D. Lee, G. Matkin, L. Sandall, W. Schacht, and C. Speth. Fostering the Next Generation of Agricultural and Natural Resource Professionals through Experiential Learning in Research, Education and Extension. US Department of Agriculture-NIFA. 2017-2019.

*SAP WBS Account #: 25-6222-0800-001*

1. $91,000. **Keshwani J.** and R. Koelsch. Introducing Environmental Sustainability Principles for Food Production into High School Science. Environmental Protection Agency. 2017-2018.

*SAP WBS Account #: 25-6321-0341-001*

1. $999,644. Subbiah, J., J. Chen, A. Guru, D. Keshwani, **J. Keshwani**, R. Koelsch, D. Rosenbaum, E. Thompson. Immersive Educational Game Simulations to Enhance Understanding of Corn-Water-Ethanol-Beef System Nexus. National Science Foundation. 2016-2019.

*SAP WBS Account #: 25-6321-0333-001*

1. $48,722. **Keshwani, J**., A. Pannier, N. Iverson, and K. Adams. Improving Teacher Quality through Biomedical Engineering BLAST! Workshops. Nebraska Coordinating Commission for Postsecondary Education. 2016-2017.

*SAP WBS Account #: 26-6321-0314-001*

1. $984,189. Barker, B., **J. Keshwani**, M. Krehbiel, C. Nelson, G. Nugent, and W. Weiss. Nebraska Wearable Technologies. National Science Foundation. 2014-2017.

*SAP WBS Account #: 25-1714-0096-001*

1. $75,130. Barker, B., **J. Keshwani**, and C. Nelson. Nebraska Blast! Improving Teacher Quality through STEM Workshops. Nebraska Coordinating Commission for Postsecondary Education. 2014-2015.

*SAP WBS Account #: 26-6329-0095-001*

1. $1,000. Borck, H., K. Elsen, E. Janning, **J. Keshwani**, and L. Luck. Ag-Citing Adventure Mobile App/Website. Poultry and Egg Division, Nebraska Department of Agriculture, 2014-2015.

*SAP WBS Account #: NA*

1. $6,000. Borck, H., K. Elsen, E. Janning, **J. Keshwani**, and L. Luck. Ag-Citing Adventure Mobile App/Website. Nebraska Corn Board, 2014-2015.

*SAP WBS Account #: NA*

1. $500. **J. Keshwani**. Biomedical Engineering Workshop. Nebraska Department of Education. 2014.

*SAP WBS Account #: 26-6321-0271-001*

1. $15,000. Borck, H. and **J. Keshwani**. Monsanto and 4-H Challenging Youth to be the Solution. National 4-H Council. 2014

*SAP WBS Account #: 26-6342-0182-001*

Section 2.2.3 External Research Grants Submitted

1. $597,589. M. Mamo, L. Sandall, **J. Keshwani**, D. Uden, and C. Cordova. Fostering the Next Generation of Inclusive Agricultural and Natural Resources Professionals. USDA-NIFA. 2024-2027.

Section 2.2.4 External Research Grants Submitted but not Funded

1. $9,985,336. D. Santra, **J. Keshwani**, et al. Development And Assessment Of Sustainable Hemp Feedstock For The Bioeconomy. USDA-NIFA. 2024-2029
2. $9,999,982. G. Erickson, **J. Keshwani**, et al. Circular economy for integrated crop-beef systems: Improving N circularity while achieving net-zero greenhouse gas emissions. USDA-NIFA. 2023-2028
3. $9,997,987. S. Pitla, **J. Keshwani**, et al. Decentralized Farms for Decarbonization, Climate-Smart Farming, and Resilient Rural Communities (DeFa4DeCa). USDA-NIFA. 2024-2029
4. $719,080. C.C. Nwaizu, C. Bourke, Z. Cyamani, and **J. Keshwani**. Facilitating transdisciplinary practice-based learning through MUSCLE (Multiuser VR-AR hybrid based Shared Remote Collaborative Learning Environment in Education for Sustainability Development. NSF. 2023-2026
5. $4,000,000. J. Luck**, J. Keshwani**, et al. Growing Climate Smart Practices across the Midwest: Nebraska Future Agricultural Research and Management Systems (NFARMS). USDA-NIFA. 2023-2027.
6. $600,000. S. Pitla, T. Brown-Brandl, **J. Keshwani**, and L. Perry. Agricultural Technology Product Innovation Fellows. USDA-NIFA. 2023-2027.
7. $38,100. **J Keshwani** and E Ingram. Garden TOOLS for Corn. Nebraska Corn Board. 2022-2023
8. $749,670. M. Mamo, **J. Keshwani**, et al. Fostering the next generation of agricultural and natural resources professionals through experiential learning in research, education, and extension. USDA-NIFA. 2023-2027.
9. $83,188**. J. Keshwani**, L. Sandall, J. Obermeyer, D. Keshwani. Cultivate ACCESS Educator Community of Practice. Women Investing in Nebraska. 2022-2023.
10. $1,874,933. A. Thomas, K. Buchheister, E. Ingram, **J. Keshwani**, T. Wonch-Hill. STEMulate Elementary Mathematics. NSF. 2022-2026.
11. $2,936,000. J. Luck, **J. Keshwani**, et al. Growing Agricultural Sustainability and Resiliency through Technological Innovations: The Nebraska Farm of the Future. USDA-NIFA. 2022-2026.
12. $26,000,000. K. Rajurkar, **J. Keshwani**, et al. NSF Engineering Research Center for Cellular Agriculture in Food Engineering and Manufacturing (CAFE). NSF. 2022-2027.
13. $10,000,000. M. Wilkins, **J. Keshwani**, et al. Development and Assessment of a Sustainable Industrial Hemp Feedstock for the Bioeconomy. USDA-NIFA.
14. $300,000. J. Keshwani, E. Ingram, and T. Sessions. Integrating Social-Emotional and Computational Thinking Skills by Design (INSECTS x Design). NSF. 2021-2023.
15. $9,985,466. M. Wilkins, S. Irmak, D. Keshwani, **J. Keshwani**, and L. Pytlik-Zillig. Reducing High Plains Aquifer depletion through lignin valorization and drought-tolerant crop plant design: from Burning to Earning (B2E). USDA AFRI. 2020-2025.
16. $26,000,000. K. Rajurkar, **J. Keshwani**, and… 17 colleagues. NSF Engineering Research Center for Advanced Food Engineering and Manufacturing (CAFÉ). NSF. 2020-2025.$1,199,844. B. Barker, S. Farritor, **J. Keshwani**, G. Nugent, and D. Valentine. STRATEGIES: Nebraska Innovation Network. National Science Foundation. 2018-2021.
17. $150,000. **J. Keshwani**, E. Ingram, S. Frerichs, J. Wu-Smart, and S. Pitla. Garden TOOLS (Technology Opportunities in Outdoor Learning Spaces). US Department of Agriculture-NIFA. 2019-2021.
18. $499,442. S. PItla, J. Bradley, D. Dev, J. Herr, **J. Keshwani**, H. Nemala, and Y. Shi. Next-Generation Interdisciplinary Student Workforce Development for Addressing Engineering and Technology Needs of Agricultural Sciences. US Department of Agriculture-NIFA. 2019-2023.
19. $15,000. **J. Keshwani**, N. Iverson, R. Wachs and F. Kievit. Biomedical Engineering BLAST! Beyond School Bells. 2018.
20. $2,377,990. B. Barker, **J. Keshwani**, C. Nelson, G. Nugent, and D. Valentine. STEM+C: N\*Spark IoT (Internet of Things). National Science Foundation. 2018 - 2022.
21. $998,775. Y. Ge, J. Hay, S. Irmak, **J. Keshwani**, J. Schnable, and J. Yang. Integrating Advanced Genomics and Phenomics to Improve Energy Sorghum for Nebraska and Beyond. US Department of Agriculture-NIFA. 2018-2022.
22. $15,000,000. Cahoon, E., M. Anderson-Knott, S. Banerjee, R. Cantrell, C. Creech, B. Dutton, J. Groskopf, R. Harveson, **J. Keshwani**, A. Liska, D. Santra, and E. Thompson. Camelina Renewable Bioproduct and Fuel Oil Network (CaRBON). US Department of Agriculture-NIFA. 2017-2022.
23. $2,500,000. J. Subbiah, M. Anderson-Knott, J. Chen, L. Fulginiti, A. Guru, M. Hayes, J. Hay, D. Keshwani, **J. Keshwani**, R. Koelsch, R. Perrin, C. Ray, J. Smith, C. Syron, and H. Yang. INFEWS/T2: An Integrated Decision-Making Tool for Crop-Water-Energy-Livestock Nexus. National Science Foundation. 2017-2022.
24. $640,000. Krehbiel, M., A. Abts, B. Barker, G. Jones, **J. Keshwani**, and P. Wonch-Hill. NE CYFAR Sustainable Community Project 2016. US Department of Agriculture-NIFA. 2016-2021.
25. $2,499,885. Barker, B., A. Guru, **J. Keshwani**, C. Nelson, and G. Nugent. Technologies (N\*Spark + IoT) Project. National Science Foundation. 2016-2019.
26. $300,000. Mamo, M., J. Carroll, **J. Keshwani**, D. Lambe, D. Lee, G. Matkin, L. Sandall, W. Schacht, and C. Speth. Fostering the Next Generation of Agricultural and Natural Resources Professionals through Experiential Learning in Research, Education and Extension. USDA-AFRI. 2016-2018.
27. $23,000. L. Luck, K. Anderson, and **J. Keshwani**. Developing the EquiMove Horse Sensor and Instructional Design Website: An online resource to educate people on health and fitness of their horses. American Association of Equine Practitioners Foundation. 2015-2016.
28. $27,720. L. Luck, K. Anderson, and **J. Keshwani**. Equimove Sensor and Instructional Design Website. USA Equestrian Trust. 2015-2016.
29. $2,499,917. Barker, B., G. Bashford, **J. Keshwani**, G. Nugent, and J. Pedersen. WearTec + IoT (Internet of Things). NSF. 2015-2018.
30. $387,525. Stains, M., K. Adams, B. Couch, J. Dauer, J. Dauer, C. Forbes, D. Golick, M. Griep, **J. Keshwani**, M. Kuzila, Y.-J. Lai, M. Pegg, and A. Zygielbaum. REU Site: Immersion into the Science, Technology, Engineering, and Mathematics (STEM) Education Research Community. NSF. 2015-2018.
31. $34,965. Hay, J. and **J. Keshwani**. Benchmarking Energy Literacy in Nebraska. NE Energy Office. 2014.
32. $2,953,460. Barker, B., **J. Keshwani**, C. Nelson, and G. Nugent. Project SENSE. NSF. 2013-2017.

**Section 2.3 Research Patents and Awards**

Section 2.3.1 Research Patents

 None

Section 2.3.2 National and International Research Awards and Recognition

2023 Jack Everly Journal Award, NACTA

*Speth C, Ramirez II S, Ibach R, Lee D, Sandall L, Mamo M,* ***Keshwani J****, Lambe D, Matkin G, and Schacht W. Student Perceptions of Mentoring Practices During Undergraduate Research Experiences. NACTA Journal 2022 Volume 66*

Section 2.3.3 Regional and Local Research Awards and Recognition

2022 IANR Omtvedt Innovation Team Award

2022 Robert B. Daugherty Water for Food Institute Fellow

**Section 3 Teaching Accomplishments**

**Section 3.1 Ph.D. Students**

Section 3.1.1 Ph.D. Graduated

None

Section 3.1.2 Ph.D. in Progress

1. 2024 – present Karisma Yumnam Ph.D. Agricultural & Biological Systems Engineering

Section 3.1.3 Ph.D. Student Committees Served On

1. 2022 – present Karen Nieto Flores Ph.D. Food Science
2. 2020 – present Heydi Calderon Ambelis Ph.D. Agricultural & Biological Systems Engineering
3. 2017 – 2021 Wheaton Schroeder Ph.D. Chemical Engineering
4. 2016 – 2020 Zoe Falls Ph.D. Educational Studies: Instructional Technology

**Section 3.2 M.S. Students**

Section 3.2.1 M.S. Graduated

1. 2020 – 2022 Yi Xuen Tay M.S. Education Administration
2. 2018 – 2020 Rachel Ibach M.S. Applied Science
3. 2017 – 2018 Nathan Rice M.S. Agricultural & Biological Systems Engineering
4. 2015 – 2018 Holly Carr M.S. Applied Science

Section 3.2.2 M.S. in Progress

1. 2023 – present Samereh Soleimani Babadi M.S. Agricultural & Biological Systems Engineering
2. 2023 – present Bridget McKinley M.S. Agronomy & Horticulture
3. 2022 – present Logan Newman M.S. Education Administration
4. 2015 – 2017 Tyler Wolken M.S. Applied Science (withdrew from program)

Section 3.2.3 Non-Thesis Graduate Students Advised

1. 2016 – present Karly Black M.S. Applied Science

Section 3.2.4 Graduate Student Independent Research Projects Supervised

None

Section 3.2.5 M.S. Student Committees Served On

1. 2022 Casey Carriker M.S. Applied Science
2. 2021 Karla Melgar Velis M.S. Mechanized Systems Management
3. 2018 – 2020 Agustin Olivo M.S. Mechanized Systems Management
4. 2019 – 2020 Rahmi Aulia M.S. Dental Biomaterials, UNMC
5. 2018 Brandy Wagner-Schulze M.A.S. Applied Science
6. 2015 – 2017 Carol Thompson M.S. Animal Science
7. 2015 – 2016 Dagen Valentine M.A.S. Applied Science
8. 2014 – 2016 Molly Brandt M.A.S. Applied Science
9. 2013 Jessica Taylor M.S. Agricultural & Biological Systems Engineering

**Section 3.3 Undergraduate Students**

Section 3.3.1 Independent Research/UCARE

1. 2022 Aspen Rittgarn Environmental Studies

Agricultural Education & Literacy Rates

1. 2022 - present Nia Kaufmann Entomology

Growable social media and content designer

1. 2022 Abigail Lutjelusche Agricultural Leadership, Education and Communication

Know Your Well Curriculum Development

1. 2021 – 2022 Huey-Xian Wong Psychology, UNL

Shelly Dinh UCARE: Investigation of afterschool social impacts

Annie Nelson

1. 2021 Junior Gustavo Armando Agroindustrial Production Engineering,

Ariza Guerrero University de La Sabana, Columbia

1. 2020 – 2021 Olivia Drennon Agricultural Leadership, Education and Communication

Cultivate ACCESS lead ambassador

1. 2019 – 2021 Taylor Nielson Agricultural Leadership, Education and Communication

Cultivate ACCESS lead ambassador

1. 2019 – 2021 Kayla Ney Biological Systems Engineering, UNL

Biomedical Engineering Youth Workshop, Honors Thesis

1. 2018 – 2019 Alexander Zbojniewicz Computer Engineering, UNL

Virtual Reality Education Specialists, Nebraska Innovative

Maker Co-Laboratory

1. 2018 – 2019 Miranda Earnest Agronomy & Horticulture, UNL

Community Gardens to Promote Science Literacy

1. 2018 – 2019 Jeremiah Cantu Computer Engineering, UNL

Computer hardware support and design, Nebraska Innovative Maker Co-Laboratory

1. 2018 Grace McDonald Agricultural Leadership, Education and Communication

Biomedical Engineering BLAST! Video Production

1. 2017 – 2018 Matt Boren Biological Systems Engineering, UNL

Matt McManigal Virtual Reality Education Specialists, Nebraska Innovative

Ashley Nelson Maker Co-Laboratory

1. 2016 Emily Long Agricultural & Environmental Sciences Communication, UNL

Online STEM Literacy Platform for African Students and Educators

1. 2015 – 2016 Bennett Turner Agricultural Engineering, UNL

Equimove: Horse sensor development

1. 2015 – 2016 Meghan Biegert Biological Systems Engineering, UNL

Wear-TEC projects and curriculum development

1. 2015 – 2016 Katie Meiergerd Biological Systems Engineering, UNL

UCARE: K-12 Engineering outreach activity development

1. 2014 – 2015 Whitney Schultz Mechanized Systems Management, UNL

National Center for Agricultural Literacy

1. 2014 – 2015 Mackenzie Miller Biological Systems Engineering, UNL

Wear-TEC teacher trainings and student workshops

1. 2013 – 2014 Nikolai Reitz Biological Systems Engineering, UNL

UCARE: Development and Validation of E-Textile Activities to Teach Elementary Students the Engineering Design Process

1. 2013 Maggie Clay Mechanical Engineering, UNL

Mad Science Mondays at the Edgerton Explorit Center, Aurora, NE

1. 2012 Grant Meyer Mechanical Engineering, UMKC

Material Properties of Experimental Biopolymers for Dental and Orthopaedic Applications

1. 2012 Daniel Rodman Chemistry, UMKC

Material Properties of Experimental Biopolymers for Dental and Orthopaedic Applications

1. 2011 – 2012 Ryan Holmes Civil Engineering, UMKC

Material Properties of Experimental Biopolymers for Dental and Orthopaedic Applications

1. 2011 Aaron Dorsett Mechanical Engineering, UMKC

Mechanical Testing of Silorane Bone Cement

1. 2002 – 2003 Hajira Ahmad Biological Systems Engineering, UNL

Section 3.3.1.1 Senior Design Teams Advised

1. 2017 – 2018 Kyle Downey, Will Dudley, Blake Hass, and Neng Huynh

Enhanced Functionality of Tablets in Point-of-Care Ultrasound

1. 2016 – 2017 Freshta Baher, Calin Kachek, Emily Thrailkill and Kevin Vakilzadian

Dental Implant Device

1. 2015 – 2016 Zach Janecek, Brinson Chapp, Michael Moeller and Kate Watts

 Stimulating Cognitive Development in Disabled Infants through Positive Feedback

1. 2014 – 2015 Jared Beyersdorf, Ted Kocher, Kelli Rice and Emily Harrison

 McKenzie’s Mobility Team

1. 2012 – 2013 Monica Krause, Jared Ostdiek, and Katelyn Stanley

 Abdominal Pressure Sensing Dressing

1. 2011 – 2012 Beth Cowles, Liz Hungerford, and Tyler Borcyk (client)

Bone Cement Mixing Device

1. 2010 – 2011 Johnathon McCoy, Allison Mettler, Cady Sargus, and Ted Kocher (client)

Placement Guide for Internal Silorane Fracture Stabilization

Section 3.3.2 Average number of Undergraduates Advised per Year

|  |  |
| --- | --- |
| Year | Average Number Advised |
| 2012 | 0 |
| 2013 | 15 |
| 2014 | 12 |
| 2015 | 15 |
| 2016 | 19 |
| 2017 | 10 |
| 2018 | 7 |
| 2019 | 8 |
| 2020 | 10 |
| 2021 | 13 |
| 2022 | 11 |
| 2023 | 5 |

**Section 3.4 Teaching Awards and Recognition**

Section 3.4.1 National and International Teaching Awards and Recognition

2018 Early Achievement Award, ASEE Biological and Agricultural Engineering Division

Section 3.4.2 Regional and Local Teaching Awards and Recognition

2023 BSE Recruitment & Retention Certificate of Appreciation

2016 Junior Faculty Holling Family Award for Teaching Excellence

2015 UNL Parents Recognition Award

**Section 4 Service Accomplishments**

**Section 4.1 Professional Service**

Section 4.1.1 Journal Editorship

 None

Section 4.1.2 Technical Reviewer for Journals

On average I review 12 papers a year.

* Education Sciences
* ASEE Computers in Education
* Social Sciences Journal
* Sustainability Journal
* Journal of Cleaner Production
* Journal of Pre-College Engineering Education Research (J-PEER)
* Transactions of the American Society of Agricultural and Biological Engineering

Section 4.1.3 Leadership Positions in International and National Organizations

1. July 2018 – present **EOPD-01 Executive/Steering Committee**

 American Society of Agricultural and Biological Engineers

 Meetings Council Representative, July 2022 – July 2023

 Chair, July 2021 - present

 Vice Chair, July 2019 - 2021

 Secretary, July 2018 – July 2019

1. July 2014 – 2018 **EOPD-203 Undergraduate & Graduate Instruction**

 American Society of Agricultural and Biological Engineers

 Past Chair, July 2017 – July 2018

 Chair, July 2016 – July 2017

 Vice Chair, July 2015 – July 2016

 Secretary, July 2014 – July 2015

1. June 2014 – 2020 **Precollege Engineering Education Division**

 American Society of Engineering Education

 Program Chair, June 2023 - present

 Past Program Chair, June 2019 – June 2020

 Program Chair, June 2018 - June 2019

 Program Chair Elect, June 2017 - June 2018

 Workshop Chair, June 2015 – June 2017

 Committee member, K-12 Workshop Committee, June 2014-2017

1. June 2013 – 2020 **New Engineering Educators Division**

 American Society of Engineering Education

 Past Chair & Awards Chair, June 2019 – June 2020

 Chair, June 2018 – June 2019

 Program Chair, June 2017 – Jun 2018

 Program Chair Elect, June 2016 – June 2017

 Treasurer, June 2015 – June 2016

 Secretary, June 2013 – June 2015

Section 4.1.4 Leadership Positions in Regional and Local Organizations

1. 2023 – present Publications chair, ASABE Nebraska Section
2. 2022- 2023 Secretary, ASABE Nebraska Section

Section 4.1.5 Membership in Professional Organizations

1. 2021–present National Association of Extension Program & Staff Development Professionals (NAEPSDP)
2. 2013 – present American Society of Agricultural and Biological Engineers (ASABE)
3. 2013 – present American Society of Engineering Education (ASEE)
4. 2013 – 2016 North American Colleges & Teachers of Agriculture (NACTA)
5. 2009 – 2012 American Society of Mechanical Engineers (ASME)
6. 2006 – 2012 International Association of Dental Research (IADR)
7. 2001 – 2004 Biomedical Engineering Society (BMES)

Section 4.1.6 National and International Service Awards

None

Section 4.1.7 Regional and Local Service Awards

None

Section 4.1.8 Research Review Panels and Dates of Service

1. Discovery Research PreK-12 (DRK-12), National Science Foundation

January 2018

**Section 4.2 University Service**

Section 4.2.1 Leadership Positions

1. 2017 – present Trust Edge Facilitator, Nebraska Extension
2. 2019 – 2020 Chair, IANR Liaison Committee
3. 2014 – 2016 Coordinator, National Center for Agricultural Literacy

Section 4.2.2 Committee Memberships

1. 2023 – present IANR Ad Hoc Committee on P&T Standards
2. 2018 – 2019 Advisory Board, Center for Transformative Teaching
3. 2017 – 2020 IANR Liaison Committee
4. 2015 – present College STEM Education graduate minor committee
5. 2015 – 2016 Extension Professional Orientation & Campus Visit Host

**Section 4.3 College Service**

Section 4.3.1 Leadership Positions

1. 2018 – 2019 Chair, CASNR Teaching and Learning Improvement Council

Section 4.3.2 Committee Memberships

1. 2022 – present CASNR Student Success Working Group
2. 2015 – 2019 CASNR Teaching and Learning Improvement Committee
3. 2015 – 2018 Masters of Applied Science – Science for Educators Committee

**Section 4.4 Unit Service**

Section 4.4.1 Leadership Positions

1. 2022 – present External Relations, co-chair
2. 2022 – present Extension Committee, chair
3. 2019 – 2022 Extension Committee, co-chair

Section 4.4.2 Committee Memberships

1. 2021 – present Student Success Committee
2. 2020 – present Social Committee
3. 2019 – present Extension Committee
4. 2019 – present External Relations Committee
5. 2019 – 2020 Awards Committee
6. 2018 – 2019 Scholarship Committee
7. 2014 – 2019 Curriculum Committee