

Keely L. Buesing, MD, FACS

University of Nebraska Medical Center
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Omaha, Nebraska 68198-3280

Department of Surgery, Division of Acute Care
Surgery

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EDUCATION

Undergraduate University of Nebraska-Lincoln
Lincoln, NE
Degree: BA
1/1996 – 5/2001

Medical School University of Texas Health Science Center-San Antonio
San Antonio, TX
Degree: MD
7/1/2001 – 6/30/2005

Residency University of Nebraska Medical Center
Department of General Surgery
Omaha, NE
7/1/2005 – 6/30/2012

Research Fellowship Children's Hospital of Wisconsin
Department of Pediatric Surgery
Milwaukee, WI
7/1/2008 – 6/30/2010

Clinical Fellowship Washington University/Barnes-Jewish Hospital
Department of Surgical Critical Care
St. Louis, MO
7/1/2012 – 6/30/2013

BOARD CERTIFICATIONS & LICENSING

Board Certified, General Surgery	Certificate No. 59015	Exp. 12/31/2024
Board Certified, Surgical Critical Care	Certificate No. 3339	Exp. 12/31/2024

State of Nebraska	License No. 27342	Exp. 10/01/2024
National Provider Identifier	No. 1710191978	

PROFESSIONAL SOCIETY MEMBERSHIPS

2005 – present	American Medical Association
2005 – present	American College of Surgeons
2012 – present	Society of Critical Care Medicine
2013 – present	Nebraska Chapter of American College of Surgeons
2013 – present	Eastern Association for the Surgery of Trauma

2014 – present	Association for Academic Surgery
2014 – present	Shock Society
2015 – present	Association of Women Surgeons
2018 – present	Extracorporeal Life Support Organization
2023 – present	Nebraska Drug Discovery and Development Pipeline (ND ³ P)
2024 – present	American Heart Association
2024	Alpha Omega Alpha

APPOINTMENTS

2013 – 2018	Assistant Professor of Surgery, Department of Surgery, University of Nebraska Medical Center (UNMC), Omaha, NE
2015 – present	Core Faculty, General Surgery Residency Program, Department of General Surgery, UNMC
2015 – present	Graduate Faculty, College of Medicine, UNMC
2015 – present	Faculty, Integrative Physiology & Molecular Medicine (IPMM) Doctoral Program, UNMC
2015 – present	Faculty, Interdisciplinary Graduate Program in Biomedical Sciences, UNMC
2015	Fellow, American College of Surgeons
2016 – 2020	Co-Director of Virtual OR Skills Lab Curriculum, Department of Surgery, UNMC
2016 – 2020	Medical Director of Emergency General Surgery, Division of Acute Care Surgery, Department of Surgery, UNMC
2016 – present	Principal Investigator, National Strategic Research Institute (NSRI), University of Nebraska System
2018 – 2025	Associate Professor, Department of Surgery, UNMC
2019 – present	Courtesy Faculty, Department of Cellular and Integrative Physiology, UNMC
2021 – present	Fellow, National Strategic Research Institute, University of Nebraska System
2022 – present	Director of Research, Division of Acute Care Surgery, Department of Surgery, UNMC
2025 – present	Professor, Department of Surgery, UNMC

COMMITTEE ACTIVITIES

National

2015 – 2020	Grants & Fellowship Committee, Association of Women Surgeons
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2018 – present	Scientific Advisory Board, Respirogen, Inc., Boulder, CO
2022 – present	Scientific Review Committee, Society of Critical Care Medicine (SCCM)
<u>Local</u>	
2014 – 2016	Advisory Board of Experts, Omaha Emergency Medical Services & Division of Acute Care Surgery (UNMC), Omaha, NE
2014	Promotion & Tenure Committee, Department of Surgery, UNMC
2015	Summer Research Student Selection Committee, Department of Surgery, UNMC
2015 – present	General Surgery Residency Program Evaluation Committee, Department of Surgery, UNMC
2015 – 2017	Surgical Services Operations Committee, UNMC
2015	Academic Variable Compensation Plan Committee, Department of Surgery, UNMC
2020 – present	Research & Development Committee, College of Medicine, UNMC
2021 – present	Application Review Committee, General Surgery Residency Program, Department of Surgery, UNMC
2021	Search Committee for National Strategic Research Institute Executive Director, University of Nebraska System
2021 – present	A. Ross McIntyre Cardiorenal Seminar Committee, Department of Cellular and Integrative Physiology, UNMC, Omaha, NE
2021 – present	Surgeon Consultant, Nebraska Biocontainment Unit, UNMC/Nebraska Medicine
2022 – present	Surgery Core Research Office Committee, Department of Surgery, UNMC
2022	Promotion & Tenure Committee, Department of Surgery, UNMC
2023 – 2025	Co-chair, Medical Countermeasures NSRI Fellows Working Group, University of Nebraska System
2025 – present	Vice Chair, College of Medicine Extracurricular Program Oversight Committee (EPOC), UNMC

EDITORIAL AND REVIEW ACTIVITIES

2013 – present	Ad hoc peer review, American Journal of Surgery
2015	Invited peer reviewer for Clinical Medicine Insights: Therapeutics

2015	Invited reviewer, Journal of Pregnancy & Child Health
2016 – present	Ad hoc peer review, Military Medicine
2016	Specialist Reviewer, FY16 Funding Cycle, Defense Health Program, U.S. Army Medical Research & Development Command (USAMRDC)
2018 – present	Ad hoc peer review, Journal of Trauma and Acute Care Surgery
2019	Scientist Reviewer, FY19 Funding Cycle, Combat Readiness-Medical Research Program (CRRP), Congressionally Directed Medical Research Programs (CDMRP)
2019	Scientist Reviewer, FY21 Funding Cycle, Combat Casualty Care Research Program (CCCRP), USAMRDC
2023	Scientist Reviewer, FY22 Funding Cycle, Toxic Exposures Research Program, CDMRP
2023	Scientist Reviewer, FY23 Funding Cycle, Toxic Exposures Research Program, CDMRP
2024	Scientist Reviewer, FY24 Funding Cycle, Peer Review Medical Research Program, CDMRP
2024	Ad hoc peer review, The Federation of American Societies for Experimental Biology (FASEB) Journal

PUBLICATIONS AND PRESENTATIONS

Peer Reviewed Manuscripts

Buesing K, Perry D, Reyes C, Abdessalam S. *Castleman disease: surgical cure in pediatric patients*. J Pediatr Surg. 2009 Jan;44(1):e5-8. PMID: 19159710.

Buesing KL, Densmore JC, Kaul S, Pritchard KA Jr., Jarzembowski JA, Gourlay DM, Oldham KT. *Endothelial microparticles induce inflammation in acute lung injury*. J Surg Res. 2011 Mar;166(1):32-39. PMID: 20828748.

Buesing KL, Tracy ET, Kiernan C, Pastor AC, Cassidy LD, Scott JP, Ware RE, Davidoff AM, Rescorla FJ, Langer JC, Rice HE, Oldham KT. *Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review*. J Pediatr Surg. 2011 Jan;46(1):178-83. PMID: 21238662.

Mullapudi B, Flowers KA, **Buesing KL**. *Deep Venous Thrombosis and Venous Thromboembolism Prophylaxis*. Surg Clin North Am. 2015 Apr;95(2):285-300. PMID: 25814107.

Damme C, Luo J, **Buesing KL**. *Isolated Prehospital Hypotension Correlates with Injury Severity and Outcomes in Trauma Patients*. Trauma Surg Acute Care Open. 2016 Aug 12;1(1):e000013. PMID: 29766057.

Legband ND, **Buesing K**, Borden M, Terry B. *The Treatment of Acute Respiratory Distress Syndrome in Rats with a Peritoneal Dosing System*. J Med Device. 2015 Jun 1;9(2):020929. PMID: 32328216.

- Legband ND, Hatoum LH, Thomas AN, Kreikemeier-Bower C, Hostetler D, **Buesing KL**, Borden MA, Terry BS. *Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome*. J Med Device. 2016 Jun 1;10(2):020905. PMID: 32328208.
- Hatoum L, Legband N, Thomas A, Kreikemeier-Bower C, Hostetler D, Borden M, **Buesing K**, Terry B. *Design and development of a rat peritoneal infusion device for oxygen microbubble bolus delivery*. J Med Device. 10(2), pp. 020908.1-02.0908.3. 2016. DOI: 10.1115/1.4033203.
- Visenio M, **Buesing K**, Moffatt K. *Solid Organ Laceration in an Adolescent Soccer Player: A Case Report*. Medicine & Science in Sports & Exercise. Med Sci Sports Exerc. 2017 Oct;49(10):1975-1979. PMID: 28489685.
- Aghabaglou F, **Buesing K**, Legband ND, Slagle C, Xie W, Borden M, Kreikemeier-Bower C, Terry BS. *Preliminary Investigation of the Mechanics of a Novel Thoracic Cavity Extra Pulmonary Oxygenation Device*. Proceedings of the 2018 Design of Medical Devices Conference, DMD 2018-6908. 2018 Apr.
- Tecos ME, **Buesing KL**. *Updates on Prophylaxis for Deep Venous Thrombosis and Venous Thromboembolism*. Medical Research Archives. May 2019;7(5):1-18.
- Fiala A, Slagle C, Legband N, Aghabaglou F, **Buesing K**, Borden M, Terry B. *Treatment of a rat model of LPS-induced ARDS via peritoneal perfusion of oxygen microbubbles*. J Surg Res. 2020 Feb;(246):450-456. PMID: 31629496.
- Tecos ME, Kern BS, Foje NA, Leif ML, Schmidt M, Steinberger A, Bajinting A, **Buesing KL**. *Perioperative considerations in nonagenarians*. Surg Open Sci. 2020 Apr 26;2(4):45-49. PMID: 33073225.
- Wankum BP, Reynolds RE, McCain AR, Zollinger NT, **Buesing KL**, Sindelar RD, Freihaut FM, Fekadu T, Terry BS. *Development of a multi-patient ventilator circuit with validation in an ARDS porcine model*. J Anesth. 2021 Aug;35(4):543-554. PMID: 34061251.
- Leiphraakpam PD, Weber HR, McCain A, Romaguera-Matas R, Martinez-Duarte E, **Buesing KL**. *A novel large animal model of smoke inhalation-induced acute respiratory distress syndrome*. Respir Res. 2021 Jul 7;22(1):198. PMID: 34233680.
- Leiphraakpam PD, Weber HR, Ogun T, **Buesing KL**. *Rat model of smoke inhalation-induced acute lung injury*. BMJ Open Respir Res. 2021 Jul;8(1):e000879. PMID: 34301712.
- Mohammed RUR, Zollinger NT, McCain AR, Romaguera-Matas R, **Buesing KL**, Borden MA, Terry BS. *Testing oxygen microbubbles via intraperitoneal and intrathoracic routes on a large pig model of LPS-induced acute respiratory distress syndrome*. Physiol Rep. 2022 Sep;10(17):e15451. PMID: 36065853.
- Mountford PA, Leiphraakpam PD, Weber HR, McCain A, Scribner RM, Scribner RT, Duarte EM, Chen J, Noe D, Borden MA, **Buesing KL**. *Colonic oxygen microbubbles augment systemic oxygenation and CO₂ removal in a porcine smoke inhalation model of severe hypoxia*. Intensive Care Med Exp. 2023 Jun 26;11(1):35. PMID: 37357222.
- Barrett CD, Moore PK, Moore EE, Moore HB, Chandler JG, Sauaia A, **Buesing K**, Hershberger D, Douglas I, Yaffe MB. *Plasminogen Deficiency of Pleural Fluid in Pleural Space Infections Due to Neutrophil Inflammatory Protease Degradation: A Cause of Intrapleural Lytic Failure?* Rapid-Fire presentation, Chest 2023, Oct 2023.

Leiphrakpam PD, Weber HR, Foster KW, **Buesing KL**. *Intraperitoneal oxygen microbubble therapy: A novel approach to enhance systemic oxygenation in a smoke inhalation model of acute hypoxic respiratory failure*. Surg Open Sci. 2023 Oct 11;16:127-133. PMID: 37881512.

Lisk C, Fan A, Cendali FI, Kakiuchi K, Swindle D, Pak DI, Tolson R, Grier A, **Buesing K**, Zaeske S, D'Alessandro A, Borden MA, Irwin DC. *Peritoneal Infusion of Oxygen Microbubbles Alters the Metabolomic Profile of the Lung and Spleen in Acute Hypoxic Exposure*. Bioengineering (Basel). 2024 Jul 27;11(8):761. PMID: 39199719; PMCID: PMC11352204.

Hirst G, Crimmins SJ, Wankum BP, **Buesing K**, Carlson MA, Terry BS. An intra-abdominal catheter placement device with automatic and accurate mechanical indication of abdominal cavity entry for laparoscopic telesurgery. ASME Journal of Medical Devices. 2024 Dec.

Kryzsko VM, Tecos ME, **Buesing KL**, Henry R. Adult presentation of symptomatic annular pancreas treated with gastrojejunostomy. J Surg Case Rep. 2024 Oct 15;2024(10):rjae638. PMID: 39411510.

Barrett CD, Moore PK, Moore EE, Moore HB, Chandler JG, Siddiqui H, Maginot ER, Sauaia A, Pérez-Calatayud AA, **Buesing K**, Wang J, Davila-Chapa C, Hershberger D, Douglas I, Pieracci FM, Yaffe MB. *Neutrophil-mediated Inflammatory Plasminogen Degradation, Rather Than High Plasminogen-Activator Inhibitor-1, May Underly Failures and Inefficiencies of Intrapleural Fibrinolysis*. Chest. 2025 Jan;167(1):67-75. PMID: 38710463.

Maginot E, Moore P, Davila-Chapa C, Wang J, Moody T, Gawargi F, Moore E, Moore H, Chandler J, Sauaia A, Sheppard O, White C, **Buesing K**, Yaffe M, Haverkamp B, McBride J, Bauman Z, Henry R, Barrett C. *tPA Activity is High and PAI-1 is Absent Early in Intrapleural Lytic Therapy for Complex Effusions*. AJRCC. Submitted Jan 2025.

Muldiarov V, Aylward, Schall K, Cantrell E, Josef A, Lamb G, **Buesing K**, Waibel B, Hamill M. *Trends in Fireworks Injuries in Pediatric Patients: A Decade Long Study at Nebraska Trauma Centers*. The American Surgeon, Submitted Jan 2025. ID: ASU-25-0185.

Diers H, Mirajkar S, Muldiarov V, Hanna A, Aylward P, Berning B, Terzian WTH, Evans C, Waibel B, Hamill M, **Buesing K**. *Penetrating Trauma in Children: Has Violence Increased Over COVID?* The American Surgeon, Submitted Jan 2025. ID: ASU-25-0200.

Muldiarov V, **Buesing K**, Kemp K. *Massive lower gastrointestinal bleeding due to Meckel's diverticulum in an atypical position*. Submitted Feb 2025. ID: tsaco-2025-001831.

Podium Presentations

Condon-Donagan research presentation, June 2009; Milwaukee, WI
Endothelial Microparticles in Acute Lung Injury. **K Buesing**, S Kaul, L Cassidy, D Weihrauch, J Densmore, K Pritchard Jr., D Gourlay, K Oldham.

American College of Surgeons Surgical Forum, October 2009; Chicago, IL
Endothelial microparticles attenuate stimulated nitric oxide production in pulmonary artery endothelial cells. **K Buesing**, S Kaul, D Jones, K Pritchard Jr., D Gourlay, J Densmore, K Oldham.

Academic Surgical Congress, February 2010: San Antonio, TX
Endothelial Microparticles Induce Inflammation in Acute Lung Injury. **K Buesing**, J Densmore, S Kaul, K Pritchard Jr., J Jarzembowski, D Gourlay, K Oldham.

American Pediatric Surgical Association, May 2010: Orlando, FL.

Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review. **K Buesing**, E Tracy, C Kiernan, A Pastor, L Cassidy, JP Scott, R Ware, A Davidoff, F Rescorla, JC Langer, H Rice, K Oldham.

American College of Surgeons Scientific Papers Session, October 2010; Washington, DC.

Novel Tripeptide Mitigates Pulmonary Sequestration of Endothelial Microparticles. **K Buesing**, J Rydlewicz, J Densmore, H Zhang, Y Shi, KA Pritchard Jr., D Gourlay, K Oldham.

General Surgery Grand Rounds, June 2012: UNMC, Omaha, NE

Endothelial Microparticles in Acute Lung Injury.

Makin' It Real: Medical Student Lecture Series. October 2013. UNMC, Omaha, NE.

Bacteriology Case Studies.

Kansas City Committee of Trauma Resident Paper Competition. December 2013. Kansas City, KS.

In an urban setting, does field hypotension matter if the patient arrives with a normal blood pressure?

General Surgery Grand Rounds, January 2014: UNMC, Omaha, NE

Updates in Management of Acute Respiratory Distress Syndrome.

NASA Aeronautics and Space Science, April 17, 2015. Lincoln, NE.

Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress Syndrome.

Rural Emergency Medicine Course, Omaha, NE. April 22, 2015.

Rural Trauma through the Eyes of a Trauma Surgeon.

Military Health System Research Symposium, Ft. Lauderdale, FL. August 19, 2015.

Development of a Novel Method of Peritoneal Oxygenation for Salvage During Acute Respiratory Failure.

Trauma Symposium, Nebraska Medicine, Omaha, NE. October 23, 2015.

Risks of Ignoring Hypotension.

ACS Committee on Trauma Meeting, San Diego, CA. April 10, 2016.

Peritoneal Membrane Oxygenation for Acute Respiratory Distress Syndrome.

Rural Emergency Medicine Course, Omaha, NE. April 2016.

Developments in Rural Trauma Care.

General Surgery Department Grand Rounds, 12/13/2017. Omaha, NE

Alternative Oxygen Carriers for Treatment of Severe ARDS.

University of Nebraska Board of Regents, 8/3/2018. Overview of oxygen microbubble research for Board of Regents.

UNMC, 10/31/2018. Overview of oxygen microbubble research for Navy RDML Darin Via, Dpty Chief of Readiness, Bureau of Medicine & Surgery, and accompanying personnel.

Surgery Research Forum, 11/28/2018. Department of Surgery, UNMC. Alternative Oxygen Carriers for Treatment of Severe ARDS.

Eastern Association for the Surgery of Trauma (EAST) Annual Scientific Assembly, 1/17/2019, Austin, TX. Assembly Quick Shot Presentation. "Oxygen Microbubbles Correct Acute Hypoxia in Rat Model of Smoke Inhalation Injury".

Presentation of Oxygen Microbubble Project during Nebraska Congressional Staff Visit to UNMC, 10/4/2019, Omaha, NE.

American College of Surgeons Committee on Trauma, Region VII, 12/4/2019, Kansas City, MO. Resident Paper Competition (Gautam Malhotra, MD, PhD presenting). "Alternative Oxygen Carriers for Treatment of Acute Respiratory Distress Syndrome". [Winner, Basic Science Competition]

Presentation of Oxygen Microbubble Project during Air Force Surgeon General's Visit to UNMC and NSRI, 12/11/2019, Omaha, NE.

79th Annual Meeting of AAST & Clinical Congress of Acute Care Surgery, Oral Presentation (Virtual Format), Sept 9-12, 2020. "Rectal delivery of oxygen microbubbles augments systemic oxygenation in porcine model of smoke inhalation-induced acute respiratory distress syndrome".

UNMC Department of Surgery Grand Rounds. 3/3/2021. Investigating the Clinician-Scientist's Role in Modern Practice. Omaha, NE.

Presentation to BARDA DRIVE Solving Sepsis task group, 11/23/2021. Oxygen microbubbles for acute hypoxia. (virtual format)

UNMC Surgery Research Forum. Hindgut Ventilation for Acute Hypoxia. 2/23/2022. Omaha, NE. (virtual format)

Military Health Science Research Symposium, Kissimmee, Florida. Presenter: Keely Buesing, MD, FACS. Sept 2022. Rectal Delivery of Oxygen Microbubbles Augments Systemic Oxygenation in a Porcine Model of Smoke Inhalation-Induced Acute Respiratory Distress Syndrome.

Society of Critical Care Medicine 2023 annual meeting. Tecos ME, **Buesing KL**, Waibel BH, Kemp K, Scriven NM, Evans CE, Hamill M. Extracorporeal membrane oxygenation for trauma patients: A single-center 5-year retrospective review.

NSRI Annual Fellows Meeting. Invited panelist, Medical Countermeasures. April 26-27, 2023. Innovation Campus, University of Nebraska-Lincoln.

Barrett CD, Moore PK, Moore EE, Moore HB, Chandler JG, Sauaia A, **Buesing K**, Hershberger D, Douglas I, Yaffe MB. Plasminogen Deficiency of Pleural Fluid in Pleural Space Infections Due to Neutrophil Inflammatory Protease Degradation: A Cause of Intrapleural Lytic Failure? Rapid-Fire presentation, Chest 2023, Oct 2023.

2025 Southeastern Surgical Congress. Quickshot Session 13, February 17, 2025. Muldiiarov V, Aylward P, Schall K, Cantrell E, Josef AP, **Buesing KL**, Hamill ME. Trends in Fireworks Injuries in Pediatric Patients: A Decade-Long Study at Nebraska Trauma Centers. Presenter: V. Muldiiarov.

2025 Southeastern Surgical Congress. Parallel Plenary Session 7, February 18, 2025. Diers H, Mirajkar S, Muldiarov V, Hanna AM, Berning BJ, Terzian WTH, Evans CH, Waibel BW, Hamill BH, **Buesing KL**. Penetrating Trauma in Children: Has Violence Increased Over COVID? Presenter: H. Diers.

56th Midwest Student Biomedical Research Forum Oral Presentation. March 8, 2025. Mirajkar S, Diers H, Muldiarov V, Hanna A, Berning BJ, Terzian WTH, Evans CH, Waibel BW, Hamill ME, **Buesing KL**. *Analyzing Pediatric Penetrating Trauma Trends Over the COVID-19 Pandemic*. Presenter: S. Mirajkar.

Southwest Surgical Congress, April 6, 2025. Mini Oral Session. Koval GE, **Buesing KL**, Terzian WTH. *Telehealth versus In Person Follow Up After Emergency Laparoscopic Appendectomy*. Presenter: G. Koval.

Poster Presentations

Shock Society, June 2009; San Antonio, TX

Preferential Pulmonary Sequestration of Endothelial Microparticles. **K Buesing**, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Medical College of Wisconsin Research Day, September 2009; Milwaukee, WI.

Preferential Pulmonary Sequestration of Endothelial Microparticles. **K Buesing**, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Finalist for Merit Award in postgraduate research.

Wisconsin Surgical Society, November 2009; Kohler, WI

Endothelial Microparticles in Acute Lung Injury. **K Buesing**, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Society of Critical Care Medicine, January 2015; Phoenix, AZ.

Prehospital Hypotension Correlates with Injury Severity and Outcomes. C Damme, J Luo, MR Goede, S Cemaj, JC Stothert, Jr., PJ Schenarts, **K Buesing**.

Finalist for Abstract Award.

NASA Human Research Program Investigators' Workshop. January 13-15, 2015. Galveston, TX.

Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress Syndrome. ND Legband, **KL Buesing**, MA Borden, BS Terry.

Design of Medical Devices Conference. April 13-16, 2015. University of Minnesota, Rochester, MN.

The Treatment of Acute Respiratory Distress Syndrome in Rats with a Peritoneal Dosing System. ND Legband, D Hostetler, **KL Buesing**, MA Borden, BS Terry.

38th Annual Conference on Shock. Shock Society. June 8, 2015. Denver, CO.

Alternative to ECMO: Development of a Novel Peritoneal Membrane Oxygen Delivery System. **KL Buesing**, ND Legband, DE Hostetler, MR Goede, MA Borden, BS Terry.

13th Annual AMA Research Symposium. AMA-MSS. November 13, 2015. Atlanta, GA.

Clinical Outcomes and Health Care Improvement Feasibility of an Enhanced Recovery Protocol in an Emergency General Surgery Setting. MR Visenio, J Luo, **KL Buesing**.

Design of Medical Devices 2016, Minneapolis, MN, April 2016.

Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome.
Legband N, Hatoum L, Kreikemeier-Bower C, Hostetler D, **Buesing K**, Borden M, Terry B.

Design of Medical Devices 2016, Minneapolis, MN, April, 2016.

Design and Development of a Rat Peritoneal Infusion Device for Oxygen Microbubble Bolus Delivery.
Hatoum L, Legband N, Thomas A, Kreikemeier-Bower C, Hostetler D, Borden M, **Buesing K**, Terry B.

AFMS Technology Demonstration Day, Washington DC, May 9, 2017.

Development and validation of deployable peritoneal microbubble oxygenation for mitigation of acute respiratory distress syndrome. Terry B, Borden M, Velds H, Slagle C, Krause C, Legband N, Bills N, Morien M, **Buesing K**.

COMEDS/NATO meeting, Washington DC, May 30, 2017.

Development and validation of deployable peritoneal microbubble oxygenation for mitigation of acute respiratory distress syndrome. Terry B, Borden M, Velds H, Slagle C, Krause C, Legband N, Bills N, Morien M, **Buesing K**.

Military Health System Research Symposium (MHSRS), Kissimmee, FL, August 2017.

Oxygen microbubble treatment of acute hypoxia: development of animal injury models and scale-up of microbubble production. Velds H, Slagle C, Borden M, Aghabaglou F, **Buesing K**, Morien M, Terry B.

Military Health System Research Symposium (MHSRS), Kissimmee, FL, August 2018.

Oxygen microbubbles correct acute hypoxia in a rat model of smoke inhalation injury. Krause C, Bills N, Weber H, Slagle C, Terry B, Borden M, **Buesing K**.

Military Health System Research Symposium, August 2020 (meeting canceled due to COVID).

Rectal Delivery of Oxygen Microbubbles Augments Systemic Oxygenation in a Porcine Model of Smoke Inhalation-Induced Acute Respiratory Distress Syndrome. **K Buesing**, P Mountford, P Leiphrakpam, H Weber, A McCain, R Romaguera Matas, B Terry, M Borden, R Scriber.

Nebraska Chapter – American College of Surgeons Annual Meeting, March 2021, Omaha, NE.

Oxygen Insufflation to Prevent Postoperative Intra-Abdominal Abscess after Laparoscopic Appendectomy for Perforated Appendicitis. Kashyap MV, McMachon AK, Waibel BH, Ernst W, **Buesing KL**.

Summer Undergraduate Research Program, August 2021, UNMC

Cell death mechanism in an isolated wood smoke inhalation-induced ARDS large animal model.
Muendesi P, Weber HR, Leiphrakpam PD, **Buesing KL**.

Nebraska Chapter – American College of Surgeons Annual Meeting, April 2025, Omaha, NE.

Trends in Fireworks Injuries in Pediatric Patients: A Decade-Long Study at Nebraska Trauma Centers.

Nebraska Chapter – American College of Surgeons Annual Meeting, April 2025, Omaha, NE.

Navigating the Storm: Unraveling the Impact of COVID-19 on Trauma Transportation by Emergency Medical Services.

Nebraska Chapter – American College of Surgeons Annual Meeting, April 2025, Omaha, NE.

Analyzing Pediatric Penetrating Trauma Trends Over the COVID-19 Pandemic

Abstracts

Shock Society 2009, San Antonio, TX

Preferential Pulmonary Sequestration of Endothelial Microparticles. **K Buesing**, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

American College of Surgeons Surgical Forum 2009, Chicago, IL

Endothelial Microparticles Attenuate Stimulated Nitric Oxide Production in Pulmonary Artery Endothelial Cells. **K Buesing**, S Kaul, D Jones, K Pritchard Jr., D Gourlay, J Densmore, K Oldham.

Wisconsin Surgical Society 2009, Kohler, WI

Endothelial Microparticles in Acute Lung Injury. **K Buesing**, S Kaul, L Cassidy, K Pritchard Jr., D Gourlay, K Oldham.

Academic Surgical Congress 2010, San Antonio, TX

Endothelial Microparticles Induce Inflammation in Acute Lung Injury. **K Buesing**, J Densmore, S Kaul, K Pritchard Jr., J Jarzembowski, D Gourlay, K Oldham.

American Pediatric Surgical Association 2010, Orlando, FL

Partial Splenectomy in Hereditary Spherocytosis: A Multi-Institutional Review. **K Buesing**, E Tracy, C Kiernan, A Pastor, L Cassidy, JP Scott, R Ware, A Davidoff, F Rescorla, JC Langer, H Rice, K Oldham.

Society of Critical Care Medicine. January 2015.

Prehospital Hypotension Correlates with Injury Severity and Outcomes. C Damme, J Luo, **K Buesing**.

Kansas City Region 7 Committee On Trauma, 2015, Kansas City, MO

The Influence of Poverty Level on Trauma Patients from Urban and Rural Environments using a Statewide Trauma Registry. JR Thompson, R Cooper, M Goede, L Schlitzkus, **K Buesing**, C Evans, J Stothert, PJ Schenarts.

Design of Medical Devices Conference, 2015.

The Treatment of Acute Respiratory Distress Syndrome in Rats with Peritoneal Membrane Oxygenation. N Legband, **K Buesing**, M Borden, B Terry.

NASA Human Research Program Investigators' Workshop, 2015.

Surgical Options in Space: Development of a Closed-Loop Peritoneal Membrane Oxygenator for Acute Respiratory Distress. ND Legband, **KL Buesing**, MA Borden, BS Terry.

Midwest Student Biomedical Research Forum, 2015, UNMC.

Prehospital Hypotension Correlates with Injury Severity and Outcomes. C Damme, J Luo, **K Buesing**.

Shock Society, 2015, Denver, CO

Alternative to ECMO: Development of a Novel Peritoneal Membrane Oxygen Delivery System. **KL Buesing**, ND Legband, MR Goede, MA Borden, BS Terry.

Military Health System Research Symposium, 2015, Kissimmee, FL

Development of a Novel Method of Peritoneal Oxygenation for Salvage During Acute Respiratory Failure. **KL Buesing**, ND Legband, MA Borden, DE Hostetler, BS Terry.

Design of Medical Devices Conference, 2016, University of Minnesota

Design and Development of a Rat Peritoneal Infusion Device for Oxygen Microbubble Bolus Delivery. L Hatoum, N Legband, A Thomas, C Kreikemeier-Bower, D Hostetler, M Borden, **K Buesing**, B Terry.

Design of Medical Devices Conference, 2016, University of Minnesota
Peritoneal Membrane Oxygenation Therapy for Rats with Acute Respiratory Distress Syndrome. N Legband, L Hatoum, A Thomas, C Kreikemeier-Bower, D Hostetler, **K Buesing**, M Borden, B Terry.

Military Health System Research Symposium, 2020 (meeting canceled due to COVID).
Rectal Delivery of Oxygen Microbubbles Augments Systemic Oxygenation in a Porcine Model of Smoke Inhalation-Induced Acute Respiratory Distress Syndrome. **K Buesing**, P Mountford, P Leiphrakpam, H Weber, A McCain, R Romaguera Matas, B Terry, M Borden, R Scriber.

79th Annual Meeting of AAST & Clinical Congress of Acute Care Surgery (Virtual Format), 2020.
Rectal delivery of oxygen microbubbles augments systemic oxygenation in porcine model of smoke inhalation-induced acute respiratory distress syndrome. Mountford PA, Leiphrakpam PD, Weber HR, McCain A, Scribner R, Borden MA, **Buesing KL**.

Society of Critical Care Medicine, 2023 Critical Care Congress.
Extracorporeal membrane oxygenation for trauma patients: A single-center 5-year retrospective review. Tecos ME, **Buesing KL**, Waibel BH, Kemp K, Scriven NM, Evans CH, Hamill ME.

Midwest Student Biomedical Research Forum, University of Nebraska Medical Center, March 2025.
Analyzing pediatric penetrating trauma trends over the COVID-19 pandemic. Mirajkar S, Diers H, Muldiarov V, Hanna A, Berning BJ, Terzian WTH, Evans CE, Waibel BW, Hamill ME, **Buesing KL**.

Book Chapters

2015 Omaha Fire Department Paramedic Treatment Protocol book.

2019 Acute Kidney Injury in the ICU. Cameron and Cameron: Current Surgical Therapy, 13th Ed.

RESEARCH GRANTS AND CONTRACTS

2013 – 2015 Faculty Diversity Award, University of Nebraska Medical Center.
Oxygen microbubble therapy.
Awarded: \$100,000
PI: Keely Buesing, MD

2014 – 2015 Biomedical Research Seed Grants, University of Nebraska System.
Peritoneal Microbubble Oxygen Therapy for ARDS.
Awarded: \$50,000
PI: Benjamin Terry, PhD
Co-I: Keely Buesing, MD; Matt Goede, MD

2015 – 2017 Nebraska Research Initiative.
Novel Treatment for Acute Respiratory Distress Syndrome using Transperitoneal Oxygenated Microbubbles.
Awarded: \$100,000
PI: Keely Buesing, MD
Co-I: Benjamin Terry, PhD; Matthew Goede, MD

2015 – 2017 NIH R21, Grant #1R21HL129144-01

Oxygen Microbubble Peritoneal Ventilation Treatment for Acute Respiratory Distress Syndrome.

Awarded: \$228,258

PI: Benjamin Terry, PhD

Co-I: Keely Buesing, MD

2016 – 2019

NU/NSRI UARC Contract No. FA4600-12-D-9000, TOPR No. 0054. Supporting Agency: US AFSG through NU/NSRI.

En-Route Care Patient Viability Technology Development.

Awarded: \$999,899

PI: Keely Buesing, MD

Co-Is: Benjamin Terry, PhD; Mark Borden, PhD

2017 – 2020

NU/NSRI UARC Contract No. FA4600-18-U913 (TOPR 0057). Supporting Agency: US AFSG through NU/NSRI.

Maturation of En-Route Care Acute Respiratory Distress Syndrome (ARDS) Mitigation Strategy

Awarded: \$3,700,000

PI: Keely Buesing, MD

Co-Is: Benjamin Terry, PhD; Mark Borden, PhD

2021 – 2023

Bridge Funding, UNMC COM and Vice Chancellor's Office

Oxygen microbubble therapy maturation.

Awarded: \$100,000

PI: Keely Buesing, MD

2018 – 2024

NU/NSRI UARC Contract No. FA4600-18-F-U911 (TOPR 0013). Supporting Agency: Air Force Medical Support Agency (AFMSA) through NU/NSRI.

Fielding Proof of Concept: En Route Care Acute Respiratory Distress Syndrome (ARDS) Mitigation Using Oxygenated Microbubbles (OMB).

Awarded: \$3,800,000

PI: Keely Buesing, MD

Co-PIs: Benjamin Terry, PhD; Mark Borden, PhD; Bob Scribner

2020 – 2025

NIH Application No. 1 R01 HL151151-01.

Peritoneal Oxygen Delivery for the Treatment Of Acute Respiratory Distress Syndrome

Awarded: \$3,315,272

Multi-PI (MPI) Project: Mark Borden, PhD (contact), **Keely Buesing, MD**; Benjamin Terry, PhD

2024 – 2025

Bridge Funding, UNMC COM and Vice Chancellor's Office

Awarded: \$66,855

PI: Keely Buesing, MD

Pending Grant Review

Council 1/2025

NIH Application No. 1 R01 GM158862-01.

Mechanistic Insights into Oxygen Microbubble Therapy for Acute Hypoxemic Respiratory Failure.

Proposed Budget: \$3,567,920

MPI: Keely Buesing, MD; Mark Borden, PhD; David Irwin, PhD

Co-I: Robert Scribner; Paul Mountford, PhD

Submitted 2/2025 NIH Application No. ***
Total Liquid Ventilation Using Oxygen Microbubbles for Acute Lung Injury Treatment.
Proposed Budget:
MPI: Mark Borden (contact), PhD; Kenta Kakiuchi, PhD; David Irwin, PhD; **Keely Buesing, MD**

PATENTS

3/2021 Docket No. 21008P
Serial No. 63/162,178
Filing Date: 3/17/2021
Title: Catheter Placement Device

TEACHING/MENTORSHIPS

2014 Mechanical Ventilation eCurriculum lecture creation & development

2014 Department of Surgery Summer Student Research Program of Excellence, UNMC, Omaha, NE. *Research mentor for first-year medical student, Clayton Damme. Resulted in poster presentation at SCCM in Phoenix, AZ – poster was selected as finalist in abstract award competition.*

2014 Resident Seminar & Case Conference, Department of Surgery, UNMC Neck & Thoracic Trauma.

2014 – ongoing Instructor & Course Director, Advanced Trauma Life Support

2014 – ongoing Recurring lecturer at medical student Friday lecture series, College of Medicine, UNMC

2014 Faculty speaker, General Surgery Review Course, American College of Surgeons, San Francisco, CA.
Lectures: Perioperative Care - Renal Function, Cardiac Critical Care.

2014 Resident Seminar & Case Conference, UNMC.
Chest Trauma.

2015 Department of Surgery Summer Student Research Program of Excellence, UNMC, Omaha, NE. Research mentor for first-year medical student, Michael Visenio.

2015 Department of Surgery Intern Boot Camp
Teaching over two days included practical skills in central line placement, chest tube placement, thoracentesis, paracentesis, intubation, cricothyroidotomy, and tracheostomy.

2015 Faculty speaker, General Surgery Review Course, American College of Surgeons, Chicago, IL.
Lectures: Renal Function, Cardiac Critical Care.

2016 Masters Committee member for Liana Hatoum, BS

University of Nebraska-Lincoln

- 2016 PhD Committee member for Nathan Legband, PhD Candidate
University of Nebraska-Lincoln.
- 2016 Faculty speaker, General Surgery Review Course, American College of Surgeons,
Washington, DC.
Lectures: Cardiac Critical Care, Pain Management.
- 2016 Chest tube skills lab. Emergency Department Cadaver Lab, UNMC
- 2016 Masters Committee member for Fariba Aghabaglou, BS
University of Nebraska-Lincoln.
- 2017 Chest Tube Skills Lab. Rural Emergency Medicine Course, UNMC
- 2017 Patient Handoff Lecture, 4th Year Medical Student Surgical Bootcamp, Dept of General
Surgery, UNMC
- 2017 Department of Surgery Summer Student Research Program of Excellence, UNMC,
Omaha, NE.
Research mentor for first-year medical student, Sarah Schmoker.
- 2017 Faculty speaker, General Surgery Review Course, American College of Surgeons.
Lectures: Cardiac Critical Care, Pain Management.
- 2018 Moderator for General Surgery Resident Lecture & Case Presentation, Department of
Surgery, UNMC
- 2019 PhD Committee member for Fariba Aghabaglou, BS
University of Nebraska-Lincoln.
- 2019 – 2020 M3 Surgical Skills Lab, recurring Friday sessions
- 2020 Master's Thesis Committee member for Nathaniel Zollinger, BS
University of Nebraska-Lincoln
- 2021 PhD Committee member for Mohammed Riaz Ur Rehman
University of Nebraska-Lincoln
- 2021 Summer Undergraduate Research Program mentor for student, Panashe Mundesi
- 2021 M1 Small Group Guidance lecture: Ethics in Everyday Practice
- 2021 – 2022 Clinical translational research mentor for new partner, Dr. Christopher Barrett.
*Aided in development of key relationships with future inter-departmental collaborators
(Drs. Nora Sarvetnik & Daniel Hershberger) and guided committee review and IRB
drafting for a clinical research project which positioned Dr. Barrett to start immediately
working toward his research goals upon his start date in October 2022.*
- 2021 – ongoing Instructor & Course Director, Fundamentals of Critical Care Support (FCCS)

2022 – 2023	Sponsorship: Capstone project for Team 11, Capstone Design Program Department of Mechanical & Materials Engineering, College of Engineering University of Nebraska-Lincoln
2022 – 2023	Sponsorship: Capstone project for BSE team University of Nebraska-Lincoln
2023 – ongoing	PhD Committee, Dr. Abbey Fingeret, University of Nebraska Medical Center
2023	Medical Student Summer Research Program mentor for Henry Diers, M1, Department of Surgery, UNMC
2024 – ongoing	Supervisor, Acute Care Surgery Division Research Fellow, Dr. Vladislav Muldiiarov
2024	Health IT & Informatics Journal Club for M1 class
2022 – ongoing	Recurring lecturer, Health Systems Scholars educational program for pre-clinical medical students, UNMC, Omaha, NE.
2025	Acute Care Surgery Enhanced Medical Education Track, UNMC COM Mentees: Stephen Sobota, Merrie Marsh, Colton Bredenkamp

HONORS

2015	Madonna Chairman’s 2015 GOAL Award, Lincoln, NE <i>The GOAL Awards were established in 1994 to honor patients and healthcare workers for outstanding courage and determination as they completed their rehabilitation, returned to their communities and resumed their life roles.</i>
2017	Student Senate Mentor Award, UNMC, Omaha, NE <i>One of 15 nominations from students across all colleges on UNMC campus for “mentors in their life who served as role models, held high ethical standards, and took personal interest in the development and growth of the students they worked with.”</i>
2018	New Investigator Award, UNMC, Omaha, NE <i>The New Investigator Award is given to outstanding UNMC scientists who in the previous two years have secured their first funding from the National Institutes of Health, the Department of Defense or other national sources. New Investigators also have to demonstrate scholarly activity, such as publishing their research and/or presenting their findings at national conventions (excerpt from UNMC website). Peer nominated.</i>
2022	Research Innovation Award, UNMC, Omaha, NE <i>Innovation Awards recognize all UNMC and UNO faculty who, during the previous fiscal year, contributed to a new invention submission, were issued a U.S. patent or had a technology licensed. Honored for:</i> · <i>New Invention: Catheter Placement Device</i>

- *New Invention: Protein Profile Heatmap*
- *New Invention: Large Animal Model for SI-Induced ARDS*
- *New Invention: Application of OMB Therapy for Intra-Abdominal Sepsis*

SERVICE/COMMUNITY WORK

- 2015 Hernia Repair for the Underserved. Bellevue, NE.
Volunteered day of umbilical and inguinal hernia repairs pro bono at Bellevue Medical Center.
- 2018 Grace 4 Haiti. Pierre de Payen, Haiti.
Week of various clinical and surgical duties for people of Haiti.
- 2021 Abstract scoring and judging of oral presentations, Midwest Student Biomedical Research Forum, UNMC virtual conference, Omaha, NE.
- 2023 Hernia Repair for the Underserved (“Hernia Day”). Omaha, NE.
- 2024 Abstract scoring and judging of oral presentations, Midwest Student Biomedical Research Forum, UNMC virtual conference, Omaha, NE.
- 2024 Hernia Repair for the Underserved (“Hernia Day”). Omaha, NE.

ELECTIVE CERTIFICATION

- 2015 Extracorporeal Membrane Oxygenation (ECMO) Management Course, Society of Critical Care Medicine. Phoenix, AZ.
- 2021 ECMO Management Course (virtual due to COVID), ELSO.
- 2022 Foundation for Advanced Education in the Sciences (FAES) Academic Program Course: Principles of Preclinical Translational Science (virtual format)