

CURRICULUM VITAE

Larry E. Bowen

Williamsport, MD 21795

(205) 503-3697

lbowen0212@bellsouth.net

QUALIFICATIONS

Inhalation Toxicology Laboratory Management

ABSL-2 and ABSL-3 Aerobiology Program Management

Principal Investigator for government and commercial contracts

Study Director for government and commercial projects

Scientific and technical staff supervisory experience

Good Laboratory Practices (GLP) training and experience

Laboratory instrument and equipment validation and calibration

Institutional Animal Care and Use Committee (IACUC) experience

Department of Justice/Centers for Disease Control and Prevention (CDC) select agent clearance

CDC *Bacillus anthracis* Ames and Monkey Pox virus Principal Investigator registration (expired)

Current vaccination titer for *Bacillus anthracis*, *Francisella tularensis*, *Rift Valley Fever virus*, *Smallpox virus (vaccinia)*

EDUCATION

B.S. Biology University of New Mexico - Albuquerque, New Mexico 1993

APPOINTMENTS/AWARDS

Adjunct faculty member of the University Of Alabama Birmingham School Of Medicine Pulmonary Injury and Repair Center (PIRC) 2011

Outstanding Achievement Award – Clinical RM at USAMRIID 2015

PATENTS

RIID 2015-08 Oro-Nasal Inhalation Plethysmography Mask Exposure System

Inventor: L. E. Bowen

Status: Provisional Patent

RIID 2015-12 Head-Only Inhalation Exposure Chamber Modification

Inventors: L. E. Bowen, J. B. Anderson, M. M. Bailey, M. E. Staymates, B. R. Haupt

Status: Provisional Patent

RIID 2016-04 Integrated Modular Bioaerosol Exposure System (IMBRE)

Inventors: L. E. Bowen, J. B. Anderson, M. M. Bailey, B. R. Haupt

Status: Provisional Patent

RIID 2016-07 In Vitro Aerosol Delivery System

Inventors: L. DaSilva, D. Nyakiti, L. Bowen, G. Pellar, J. Kesavan

RIID 2016-14 Aerosol Aging and Concentrating Drum

Inventors: J.B. Anderson, M.M. Bailey, L.E. Bowen, B.R. Haupt, T.J. O'Brien

CONTINUING EDUCATION:

Aerobiology in Biodefense

Aerosol and Particle Measurement Course (University of Minnesota)

American Biological Safety Association

American Association of Aerosol Researchers

American Society for Microbiology - Biodefense

Inhalation Toxicology Research Institute Aerosol Course

American Industrial Hygiene Association

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Laboratory Animal Care Course (Ralston Purina)
American Association for Laboratory Animal Science
International Society of Toxicology
Society of Toxicology

EXPERIENCE

United States Army Medical Research Institute for Infectious Diseases

Ft. Detrick, MD

Contractor – Alaka'ina Foundation

Bioaerosol Scientist V (2013 – Present)

Duties:

Performs duties as a Principal Investigator and Bioaerosol Scientist

Implements GLP methods for aerobiological studies

Validates and calibrates aerosol and inhalation instrumentation and equipment

Conceptualizes and designs detailed study plans

Designs and tests prototype automated inhalation exposure systems for rodents, rabbits and nonhuman primates

Designs and tests aerobiology laboratory instrumentation

Characterizes biological aerosols with respect to viability

Experienced with aerosol inhalation systems, aerosol generation and sample collection instrumentation, laboratory automation software, UV fluorescence spectra and laboratory electronics

Mentors Science and Engineering Apprentice Program (SEAP) and College Qualified Leaders Program (CQL) students and interns for the US Army Educational Outreach Program

Alion Science and Technology Corporation

Durham, North Carolina

Assistant Vice President/ Division Manager/ Program Manager (2012 – 2013)

Duties:

Assistant Vice President/Division Manager/Program Manager:

Provided inhalation toxicology support services and oversight of a National Institute of Environmental Health Sciences (NIEHS) contract

Managed 21 full-time staff including two technical subcontractors

Responsible for the financial, technical and personnel issues related to the provisions of the contract

Worked closely with the Government Project Officer, Study Director, Contracting Officer and Property Officer as well as other Alion Science and Technology Corporation management to ensure that the Contract objectives were met in a timely and cost-effective manner.

Inhalation Engineering:

Responsible for the design, development, characterization and operation of systems used at the NIEHS Inhalation Toxicology Facility.

Supervised four direct reports including a lead chemist, a senior systems engineer, a project manager and senior administrative assistant.

Southern Research Institute (SR)

Birmingham, Alabama

Associate Project Leader (2006 – 2012)

Duties:

Principal Investigator and Study Director for DMID/NIAID/NIH Contract No. N01-AI-30063

Co-Principal Investigator and Study Director for DMID/NIAID/NIH Contract No.

HHSN272201000022I-HHSN27200003

Co-Principal Investigator and Study Director for DMID/NIAID/NIH Contract No.

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HHSN272201000022I-HHSN27200001

Project/Contract administrative and budget management

SR Infectious Diseases Research Aerobiology Group Supervisor

SR IACUC Chairman January 2006 - January 2012

SR IACUC member January 2012 – March 2012

SR Crisis Team

SR First Responders Team

Significant Accomplishments:

- Designed, developed, and characterized a novel dual nonhuman primate head-out plethysmography oro-nasal inhalation challenge system
- Designed, developed, and characterized a novel dual rabbit head-out plethysmography nose-only inhalation challenge system
- Developed and implemented GLP validation plans for aerobiology instrumentation
- Developed and implemented GLP validation plans for bioaerosol inhalation systems
- Aerosolized *Bacillus anthracis* Ames, *Yersinia pestis* CO92, Influenza A (H1N1), *Mycobacterium tuberculosis* H37Rv
- Aerosolized pharmaceutical test materials, e.g., ascorbate and deferoxamine

Advanced Research Aerosol Biologist (2005 – 2006)

Duties:

SR Biological Safety Level-3 Renovation Committee Chairman

Interim Principal Investigator DMID/NIAID/NIH Contract No. N01-AI-30063

SR Infectious Diseases Research Aerobiology Group Supervisor

SR IACUC Vice-Chairman

Significant Accomplishments:

- Designed, developed, and characterized a low-flow stainless steel liquid impinger
- Designed, developed, and characterized a low-pressure, large droplet slit-jet nebulizer
- Designed, developed, and characterized a novel radial head-out plethysmograph for nonhuman primates and rabbits

Lovelace Respiratory Research Institute (LRRI)

Albuquerque, New Mexico

Research Associate (1999 – 2005)

Duties:

Aerosol Respiratory and Dosimetry Program at LRRI staff scientist

Aerosol Scientist, Study Director and Supervisor

IACUC member

Infectious Diseases Committee

Biological Safety Level-3 Committee.

Visiting scientist at the Research Center for Toxicology and Hygienic Regulation of Biopreparations (RCT&HRB), Serpukhov, Russia

Significant Accomplishments:

- Designed, developed and characterized a Canine Oro-Nasal Inhalation Exposure System
- Designed, developed and characterized a Dry Powder Aerosol Generator
- Designed, developed and characterized an All-Glass Nebulizer

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- Designed, developed, and characterized a Quad-Track Diffusion Dryer
- Designed, developed, and characterized a nonhuman primate oro-nasal inhalation exposure face mask
- Presented Joint University Program (JUP) International Scientific Transfer Committee (ISTC) Recommended Strategy Program to the Research Center for Toxicology and Hygienic Regulation of Biopreparations (RCT&HRB), Serpukhov, Russia, 2005
- Presented JUP ISTC Recommended Strategy Program to the ISTC, Washington, DC, 2005
- Aerosol Scientist for pharmaceutical (fentanyl) and chemical (sarin) vapor generation and inhalation exposures
- Aerosol Scientist for combustion gas (NO_x, SO_x, HCN) inhalation exposures
- Aerosol Scientist for nanoparticle aerosolization (carbon, vanadium pentoxide) inhalation exposures

Battelle Memorial Institute

Columbus, Ohio

Research Scientist (1998 to 1999)

Duties:

Test Director/Aerobiologist for the Aerosol Simulant Exposure Chamber at Dugway Proving Ground, Utah

Biological Safety Level-3 Inhalation Challenge Team

Significant Accomplishments:

- Developed theoretical models, blueprints, and prototypes for 2.5 µm and 5.0 µm aerosol concentrators

Researcher (1997 to 1998)

Duties:

National Security Division Aerosol Science and Technology Assessment Division Aerosol Scientist
Conducted aerosol science projects focused on the development of filters for respiratory protection of military personnel

Project Supervisor (1996 to 1997)

Duties:

Inhalation toxicology laboratory supervisor

Conducted inhalation toxicology studies of pharmaceutical test materials in rodents, canines, and nonhuman primates

Conducted inhalation toxicology studies using metered dose inhalers and dry powder inhalers

Naval Medical Research Institute Detachment Toxicology (NMRI/TD)

WPAFB, OH

Contractor – GEO-Centers, Inc.

Group Supervisor I / Scientist II (1993 to 1996)

Duties:

Inhalation Laboratory Manager and Group Supervisor at NMRI/TD

Experience with generation and inhalation exposures with combustion gases CO and CO₂

Experience with generation and inhalation exposures with chlorofluorocarbons (CFC), hydrofluorocarbons (HFC), and halocarbons

Experience with generation and inhalation exposure with acrolein vapor

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In-Tox Products, LLC

Albuquerque, New Mexico

Owner/Senior Research Engineer (1975 to Present)

Duties:

Consultant/Senior Engineer/Senior Scientist

Laboratory instrument design and testing

Computer programming

Significant Accomplishments:

Designed and developed jet and fluid delivery system for a High Output Aerosol Nebulizer.

Created a computer model to describe the theoretical behavior of cyclone samplers under varied conditions

Developed new designs for cascade impactors and inhalation exposure systems

Developed new designs for aerosol sampling instruments

Designed and developed novel inhalation exposure systems

Oral Presentations

Development of a Dual Rabbit Head-Out Plethysmography Nose-Only Inhalation System; L.E. Bowen, Aerobiology in Biodefense IV Conference, Glen Allen, VA, June 2011

Development of a Low-Flow Liquid Impinger; L.E. Bowen, Aerosol Monitoring Users Group Annual Meeting, Las Vegas, NV, May 2011

Inhalation Dosimetry in Murine Bioaerosol Challenge Models, L.E. Bowen, Aerobiology in Biodefense III Conference, Cumberland, MD, July 2009

Bioaerosol Inhalation Exposure, L.E. Bowen, Mid-South AALAS Spring Meeting, Birmingham, AL, May 2008

Nose-Only Inhalation Exposure, L.E. Bowen, Air Monitoring Users Group Annual Meeting, Las Vegas, NV, April 2008

Evaluation of a Low-Flow Stainless Steel Impinger, L.E. Bowen, Aerobiology in Biodefense II Conference, Cumberland, MD, July 2007

Nanoparticle Generation, Characterization and Inhalation Exposure, L.E. Bowen, National Institute for Standards and Technology (NIST) meeting, University of Alabama at Birmingham, March 2007

ABL-3 Inhalation Exposure System Overview, L.E. Bowen, Southeastern Biosafety Association (SEBSA) meeting, Birmingham, AL, June 2006

What Are Bioaerosols and Why Do we Work With Them, L.E. Bowen, BioTeach Community Outreach Program of the University of Alabama Birmingham, Birmingham, AL, July 2005

Recommended Strategy Program, Research Center for Toxicology and Hygienic Regulation of Biopreparations (RCT&HRB), Serpukhov, Russia, 2005

Recommended Strategy Program, Joint University Program (JUP) International Scientific Transfer Committee (ISTC), Washington, DC, 2005

Inhalation Exposure and Aerosol Characterization, L.E. Bowen, Annual New Mexico Branch AALAS

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Meeting, Albuquerque, NM, July 30, 2004

Aerosol Characterization of a Buxco Inhalation Exposure System, L. E. Bowen, E. G. Barrett, E. B. Barr, J. D. McDonald and J.L. Mauderly, poster platform session, at the 40th Annual SOT, San Francisco, CA, 2001

Small Animal Exposure Chambers: Concepts and Characterization, L.E. Bowen, The Rohm and Haas Company, Springhouse, PA, February 1993

Poster Presentations:

Development and Characterization of an Oro-Nasal Inhalation Plethysmography Mask Exposure System. L.E. Bowen, J.B. Anderson, M.M. Bailey and B.R. Haupt, ASM Biodefense and Emerging Pathogens Conference, Arlington, VA, 2016

Head-Only Inhalation Exposure Chamber Modification. M.M. Bailey, M.E. Staymates, J.E. Anderson, B.R. Haupt and L.E. Bowen, ASM Biodefense and Emerging Pathogens Conference, Arlington, VA, 2016

An *In Vitro* Model of the Blood-Air Barrier to Query the Human Responses to *Burkholderia thailandensis* Aerosol Exposure. D. Nyakiti, L.E. Bowen, G. Pellar, D. DeShazer, S.L. Taylor, C.Schmaljohn, J. Koehler, R.K. Pirlo, J. Kesavan, L.Bischel, J. Rodriguez, K. Kota, L. DaSilva, ASM Biodefense and Emerging Pathogens Conference, Washington, DC, 2015

Development of an *In Vitro* Human Pulmonary Model to Assess Host Responses to Aerosolized *Burkholderia* Species. L.E. Bowen, G. Pellar, D. Nyakiti, D.DeShazer, S.L. Taylor, C.Schmaljohn, J. Koehler, R.K. Pirlo, J.Kesavan., L.Bischel, K. Kota, L. DaSilva, Functional Analysis & Screening Technologies Congress, Boston, MA, 2014

Validation of a Rabbit and Nonhuman Primate Inhalation Challenge System to Support FDA Licensure of Medical Countermeasures for Biothreat Agents. J.E. Trombley, J.K. Bohannon, J.A. Boydston, L.E. Bowen and J.O. Raynor, NIAID Animal Models Workshop, Bethesda, MD, 2012

Determining the Recovery Efficiencies of Two Aerosol Samplers for Bacteria, Yeast and Fungi. J.E. Trombley, J.K. Bohannon, J. Spurgin and L.E. Bowen, AAAR 31st Annual Conference, Minneapolis, MN, 2012

Development of a Murine Nose-Only Inhalation Model of Influenza Infection. L.E. Bowen, J.E. Trombley, K. Harris, J.K. Bohannon, J.A. Boydston, S.X. Li and M.C. Eichelberger, ASM Biodefense, Washington DC, 2011

Longevity of Vaccine Protection Against Pneumonic Plague in BALB/c Mice. Z.N. Llewellyn, F. Koide, L.E. Bowen, J. Boydston, J. Trombley, L. Nieves-Duran, L. Shuling, N. Harman-Richardson, and P. Silvera, ASM Biodefense, Washington DC, 2011

Natural History of *Bacillus anthracis* Ames in Cynomolgus Macaques Following Inhalation Challenge. L.E. Bowen, J.E. Trombley, J.A. Boydston, J.K. Bohannon, J.S. Toomey, J.F. Mann, and Z.N. Llewellyn, ASM Biodefense, Baltimore, MD, 2010

Humoral Immunity to F1 and V Correlates with Protection Against Pneumonic Plague in Mice. Z.N. Llewellyn, F. Koide P. Silvera, L. Nieves-Duran, N. Harman-Richardson, T. Babas, J. Boydston, J.

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Trombley, K. Bohannon, and L.E. Bowen, ASM Biodefense, Baltimore, MD, 2010

Establishment of Replicating *Mycobacterium tuberculosis* in an Aerosol Mouse Model of Infection: Active vs. Chronic Infection. M.B. Minyard, J. Trombley, M. Bridgers, J. Boydston, J. Anderson, L. Bowen, Southeastern Branch ASM Conference, Savannah, GA, 2009

Performance of the Southern Research Nonhuman Primate Plethysmograph. J.K. Bohannon, Z.N. Llewellyn, J.E. Trombley, J.A. Boydston, and L.E. Bowen, Aerobiology in Biodefense, Cumberland, MD, July 2009

Calibration and verification of an exposure system for *Yersinia pestis* CO92 in a BSL-3 Facility. J. E. Trombley, J. K. Bohannon, J. A. Boydston, Z.N. Llewellyn, P.M. Silvera, and L.E. Bowen, Aerobiology in Biodefense, Cumberland, MD, July 2009

Determination of the 50% Lethal Dose (LD₅₀) of *Yersinia pestis* in Mice Following Nose-Only Inhalation Exposure. L.E. Bowen, Z.N. Llewellyn, J.A. Boydston, M.B. Minyard, M.G. Bridgers, J.E. Trombley, N. Richardson-Harman and P.M. Silvera, ASM Biodefense, Baltimore, MD, 2009

Determination of the 50% Lethal Dose (LD₅₀) of *Bacillus anthracis* in Mice Following Nose-Only Inhalation Exposure. J.E. Trombley, J.A. Boydston, Z.N. Llewellyn, N. Richardson-Harman and L.E. Bowen, ASM Biodefense, Baltimore, MD, 2009

Comparison of Blood Collection Methods in the Early Stages of Bacteremia in Mice. Z.N. Llewellyn, J.A. Boydston, J.E. Trombley and L.E. Bowen, ASM Biodefense, Baltimore, MD, 2009

Onset to Bacteremia in Mice Following Nose-Only Inhalation of *Bacillus anthracis* Ames Spores. J.A. Boydston, J.E. Trombley, Z.N. Llewellyn, and L.E. Bowen, ASM Biodefense, Baltimore, MD, 2009

Characterization of a Slit-Jet Nebulizer For Use In Bacterial Inhalation Studies. J.E. Trombley, J.A. Boydston, M.G. Bridgers, Z.N. Llewellyn, M.B. Minyard, and L.E. Bowen, AAAR 27th Annual Meeting, Orlando, FL, 2008

Does That Face Mask Really Protect You, L.E. Bowen. Z.N. Llewellyn, and D.C. Sharpe, ABSA 51st Annual Conference, Reno, NV, 2008

Characterization of a Nose-Only Inhalation Exposure System for *Bacillus anthracis* Murine Studies. L. E. Bowen, Z. N. Llewellyn, J. A. Boydston and J. E. Trombley, Aerobiology in Biodefense II Conference, Cumberland, MD, July 2007

Design and Evaluation of a Quad-Track Diffusion Dryer. L. E. Bowen, J. D. McDonald and C. H. Hobbs, AAAR 23rd Annual Meeting, Atlanta, GA, 2004

Design and Evaluation of a Dry Powder Aerosol Generator. L. E. Bowen, E. B. Barr, S. Shankar and C. H. Hobbs, ISAM 2003 14th International Congress, Baltimore, MD, 2003

All *trans*-retinoic acid (ATRA) administered by inhalation or injection does not ameliorate pulmonary emphysema in two animal models. March, T. H., Cossey, P. Y., Wayne, B. J., Esparza, D. C., and Bowen, L. E. American Thoracic Society 99th International Conference, Seattle, WA 2003

Neurobehavioral Toxicity From Brief Exposure To Low Levels Of Ozone Depleting Substance

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Replacements. G. D. Ritchie, J. Rossi III, L. E. Bowen, C. A. Ademujohn and M. S. Buring. 34th Annual Meeting of the Society of Toxicology, Baltimore, MD, March 1995

The Assessment Of Toxicity After Exposure To A Pyrotechnically Generated Aerosol. E.A. Smith, E.C. Kimmel, L.E. Bowen, J.E. Reboulet, J.H. English and R.L. Carpenter, 34th Annual Meeting of the Society of Toxicology, Baltimore, MD, 1995

Toxicological Assessment Of A Pyrotechnically Generated Aerosol. E. A. Smith, E. C. Kimmel, L. E. Bowen, J. E. Reboulet, J. H. English and R. L. Carpenter, VII International Congress of Toxicology, Seattle, WA, 1995

Behavioral And Performance Effects Of The Ozone Depleting Substance Replacement R-134A. G. D. Ritchie, J. Rossi III, E. C. Kimmel, L. E. Bowen, J. E. Reboulet and M. S. Buring, Agency for Toxic Substances and Disease Registry (ATSDR) and United States Environmental Protection Agency (EPA), Conference on Temporal Aspects in Risk Assessment for Non-Cancer Endpoints. Dayton, OH, April 1994

Behavioral And Performance Effects Of The Ozone Depleting Substance Replacement R-134A. G. D. Ritchie, J. Rossi III, E. A. Smith, E. C. Kimmel, L. E. Bowen, J. E. Reboulet and M. S. Buring, 33rd Annual Meeting of the Society of Toxicology. Dallas, TX, March 1994

Journal Publications:

Sara I. Ruiz, Nashwa El-Gendy, **Larry E. Bowen**, Cory Berkland, and Mark M. Bailey. Formulation and characterization of nanocluster ceftazidime for the treatment of acute pulmonary melioidosis. *Journal of Pharmaceutical Sciences*, 105, 11. 2016

Raju SV, Jackson PL, Courville CA, McNicholas CM, Sloane PA, Sabbatini G, Tidwell S, Li PT, Lui B, Fortenberry JA, Jones CW, Boydston JA, Clancy JP, **Bowen LE**, Accurso FJ, Blalock JE, Dransfield MT and Rowe SM. Cigarette smoke induces systemic defect in cystic fibrosis transmembrane conductance regulation function. *Am J Respir Crit Care Med*, Vol 188, Iss. 11, 1321-1330. 2013

Rivers K, **Bowen LE**, Gao J, Yang K, Trombley JE, Bohannon JK, Eichelberger MC. Comparison of the effectiveness of antibody and cell-mediated immunity against inhaled and instilled influenza virus challenge. *Virology*. 10:198. doi: 10.1186/1743-422X-10-198. 2013

Bowen, Larry E., Rivers, Katie, Trombley, John E., Bohannon, J. Kyle, Li, Shixiong X., Boydston, Jeremy A. and Eichelberger, Maryna C. Development of a murine nose-only inhalation model of influenza: comparison of disease caused by instilled and inhaled A/PR/8/34. *Frontiers in Cellular and Infection Microbiology*. Volume 2; Article 74; May 2012.

Bracher, A, Doran, S, Squadrito, G, Postlethwait, E, **Bowen, L**, Matalon, S. Targeted aerosolized delivery of ascorbate in the lungs of chlorine-exposed rats. *Journal of Aerosol Medicine and Pulmonary Drug Delivery*. 03/2012; DOI: 10.1089/jamp.2011.0963.

Zarogiannis, S. G., A. Jurkuvenaite, S. Fernandez, S. F. Doran, A. K. Yadav, G. L. Squadrito, E. M. Postlethwait, **L. Bowen**, and S. Matalon. Ascorbate and Deferoxamine Administration Post Chlorine Exposure Decrease Mortality and Lung Injury in Mice. *Am J Respir Cell Mol Biol*. 45, 3860. 2011

Fanucchi, Michelle V, Bracher, Andreas, Doran, Stephen F, Squadrito, Giuseppe L, Fernandez, Solana, Postlethwait, Edward M, **Bowen, Larry**, and Matalon, Sadis. Post-Exposure Antioxidant Treatment

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Decreases Airway Hyperplasia and Hyperreactivity Due to Chlorine Inhalation in Rats. *Am J Respir Cell Mol Biol.* 2011

Cheng, YS, **Bowen, LE**, Rando, RJ, Postlewait, EM, Squadrito, GL, and Matalon, S. Exposing Animals to Oxidant Gases: Nose Only vs. Whole Body. *Proc Am Thora Soc.* Vol 7. pp 264-268. 2010

Bowen, LE. Does that face mask really protect you? *Applied Biosafety: Journal of the American Biological Safety Association.* Volume 15 No. 2. 2010

Edgerton, DS, Cherrington, AD, Williams, P, Neal, DS, Scott, M, **Bowen, L**, Wilson, W, Hobbs, CH, Leach, C, Kuo, MC. Inhalation of human insulin (exubera) augments the efficiency of muscle glucose uptake in vivo. *Diabetes.* 55(12): 3604-3610. 2006

Edgerton, DS, Stettler, KM, Neal, DW, Scott, M, **Bowen, L**, Wilson, W, Hobbs, CH, Leach, C, Strack, TR, Cherrington, AD. Inhalation of human insulin is associated with improved insulin action compared with subcutaneous injection secretion in dogs. *J PharmacolExpTher.* 19(3): 1258-1264. 2006

March, T. H., **Bowen, L. E.**, Finch, G. L., Nikula, K. J., Wayne, B. J. and Hobbs, C. H. Effects of Strain and Treatment with Inhaled All-Trans-Retinoic Acid on Cigarette Smoke-Induced Pulmonary Emphysema in Mice. *COPD: Journal of Chronic Obstructive Pulmonary Disease,* 3:289-302. 2005

Edgerton, DS, Neal, DW, Scott, M, **Bowen L**, Wilson, W, Hobbs, CH, Leach, C, Strack, TR, Cherrington, AD. Inhalation of insulin (Exubera) is associated with augmented disposal of portally infused glucose in dogs. *Diabetes.* 54(4):1164-1170. 2005

March, TH, Cossey, PY, Esparza, DC, Dix, KJ, McDonald, **Bowen, LE.** Inhalation administration of alltransretinoic acid for treatment of elastase-induced pulmonary emphysema in rats. *Exp Lung Res.* 30(5):383-404. 2004

Cherrington, AD, Neal, DW, Edgerton, DS, Glass, **Bowen, LE**, Hobbs, CH, Leach, C, Strack, TR. Inhalation of insulin in dogs. Assessment of insulin levels and comparison to subcutaneous injection. *Diabetes.* 53(4):877-881. 2004

March, T. H., Cossey, P. Y., Wayne, B. J., Esparza, D. C., and **Bowen, L. E.** All trans-retinoic acid (ATRA) administered by inhalation or injection does not ameliorate pulmonary emphysema in two animal models. *Am. J. Respir. Crit. Care Med.* 167(7):A317. 2003

Barret, EG, Rudolph, K, **Bowen, LE**, Bice, DE. Parental allergic status influences the risk of developing allergic sensitization and an asthmatic-like phenotype. *Immunology.* 110(4):493-500. 2003

Barrett, E. G., K. Rudolph, **L. E. Bowen**, B. A. Muggenburg and D. E. Bice. Effect of Inhaled Ultrafine Carbon Particles on the Allergic Airway Response in Ragweed Sensitized Dogs. *Inhal. Toxicol.* 15:151-165. 2003

Benson, J.M., Hahn, F.F., Tibbetts, B.M., **Bowen, L.E.**, March, T.F., Langley, R.J., Murray, T.F., Bourdelais, A.J., Naar, J., and Baden, D.G. Florida Red Tide: Inhalation Toxicity of *Karenia brevis* Extract in Rats. Steidinger, K.A., Landsberg, J.H., Tomas, C.R., and Vargo, G.A. (Eds.) 2004. Harmful Algae. Florida Fish and Wildlife Conservation Commission, Florida Institute of Oceanography, and Intergovernmental Oceanographic Commission of UNESCO. 502-504. 2002

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Redman, T. K., K. Rudolph, E. B. Barr, **L. E. Bowen**, B. A. Muggenburg and D. E. Bice. Pulmonary Immunity to Ragweed in a Beagle Dog Model of Allergic Asthma. *Exp. Lung Res.* 27(5): 433-451. 2001

Ritchie GD, Kimmel EC, **Bowen LE**, Reboulet JE, Rossi III J. Acute neurobehavioral effects in rats from exposure to HFC 134a or CFC 12. *Neurotoxicology.* Apr 22(2):233-48. 2001

Smith EA, Kimmel EC, English JH, **Bowen LE**, Reboulet JE, Carpenter RL. Evaluation of the respiratory tract after acute exposure to a pyrotechnically generated aerosol fire suppressant. *J Appl Toxicol.* Mar-Apr;17(2):95-103. 1997

G.D. Ritchie, J. Rossi III, E.A. Smith, E.C. Kimmel, **L.E. Bowen**, J.E. Reboulet and M.S. Buring. Behavioral And Performance Effects Of The Ozone Depleting Substance Replacement R-134A. *The Toxicologist*, 1994. 14(1), 1994

J. Rossi III, G.D. Ritchie, E.C. Kimmel, **L.E. Bowen**, J.E. Reboulet, and M.S. Buring. The behavioral and performance effects of R-134A a non-ozone depleting refrigerant is being evaluated for ship and submarine use. *Outlook, Highlights of NMRDC Research*, NMRDC Press, 1994