

EXHIBIT A

**TO THE DECLARATION OF
LANCE PRICE, Ph.D.**

Lance B. Price, Ph.D.

HOME

101 North Park St.
Flagstaff, AZ 86001
P (443) 527-8750
lancebprice@gmail.com

OFFICE

3051 W. Shamrell Blvd., Ste. 106
Flagstaff, AZ 86001
P (928) 226-6371
lprice@tgen.org

EDUCATION

- 2006 Johns Hopkins University, Baltimore, MD
Doctor of Philosophy in Environmental Health Sciences
- 2000 Northern Arizona University, Flagstaff, AZ
Master of Science in Biology
- 1994 Northern Arizona University, Flagstaff, AZ
Bachelor of Science in Microbiology

PROFESSIONAL EXPERIENCE

- 02/08-Prsnt. Translational Genomics Research Institute (TGen), Flagstaff, AZ
Associate Professor, Division of Pathogen Genomics (promoted in 2010)
Director, Center for Microbiomics and Human Health
Director, Center for Food Microbiology and Environmental Health
- 01/07-Prsnt. Johns Hopkins University Center for a Livable Future, Baltimore, MD
Scientific Advisor
- 06/09-12/11 Interdisciplinary Health Policy Institute, Flagstaff, AZ
Senior Scientist
Director, Office of Wellness and Healthy Communities
- 01/09-12/10 Pew Charitable Trusts, Washington, DC
Senior Science Advisor, Pew Campaign on Human Health and Industrial Farming
- 01/07-02/08 Johns Hopkins University School of Medicine, Baltimore, MD
Director of Pathogenesis and Molecular Diagnosis of Infectious Diseases
- 08/03-12/06 Johns Hopkins University, Baltimore, MD
Graduate Research Assistant
- 12/05-08/06 Pew Commission on Industrial Farm Animal Production, Baltimore, MD
Research Specialist
- 04/02-08/03 Johns Hopkins University, Baltimore, MD
Research Associate
- 11/00-04/02 Intralytix, Inc., Baltimore, MD
Research Scientist
- 09/97-07/00 Keim Genetic Laboratory, Northern Arizona University, Flagstaff, AZ
Research Scientist
- 01/96-05/97 Northern Arizona University, Flagstaff, AZ
Laboratory Instructor
- 01/95-05/97 Northern Arizona University, Flagstaff, AZ
Graduate Research Assistant

DISTINCTIONS

Honors

- 03/08/12 *Invited Speaker* – US Congressional Briefing on Antimicrobial Resistance. Washington DC.
- 04/14/10 *Invited Speaker* – US House Briefing on Antimicrobial Resistance and Human Health. Washington DC.
- 01/13/10 *Invited Speaker* – Applegate Farms Vendor Summit. Bridgewater, NJ.
- 12/02/09 *Invited Speaker* – US House Briefing on Antimicrobial Resistance and Costs to the Health System. Washington, DC.
- 07/13/09 *Testimony* – US House Committee on Antimicrobial Drug Use on Farms. Washington, DC.
- 07/07/05 *Invited Speaker* – US House Briefing on Industrial Animal Production and Public Health. Washington, DC.

Awards

- 2003-2005 *Predoctoral fellow Award* – the Center for a Livable Future, Johns Hopkins School of Public Health
- 2004 *Best Health Communication Project* – the Center for Communications Programs, Johns Hopkins School of Public Health
- 2000 *Outstanding Master's Thesis Award* – Department of Biological Sciences, Northern Arizona University
- 1996 *Sustaining Member Travel Grant* – American Society for Microbiology

ACTIVITIES

- Periodic *External Reviewer* – BMC Infectious Diseases, Clinical Microbiology and Infection, Emerging Infectious Diseases, Environmental Health Perspectives, Genome Research, MBio, PLoS ONE.
- Current *Member* – American Public Health Association
- Current *Member* – American Society for Microbiology
- Current *Member* – Alliance for the Prudent Use of Antibiotics
- 2004-2005 *Representative* – Johns Hopkins School of Public Health Student Assembly
- 2005-2006 *Vice President* – Social and Cultural Affairs, Johns Hopkins School of Public Health Student Assembly

RECENT ORAL PRESENTATIONS

- 03/28/12 *Livestock-Associated MRSA ST398: the birth of a superbug.* Knight Science Journalism at Massachusetts Institute of Technology, Food Boot Camp. Cambridge, MA.
- 03/12/12 *Livestock-Associated MRSA ST398: the birth of a superbug.* Johns Hopkins University School of Public Health. Baltimore, MD.
- 02/06/12 *MRSA ST398: the birth of a superbug.* Hvidovre Hospital Seminar Series. Hvidovre, Denmark.
- 10/25/11 *Livestock-associated methicillin resistant Staphylococcus aureus (LA-MRSA): an emerging threat?* Texas A&M Seminar Series. College Station, TX.
- 10/18/11 *Antibiotic-resistant urinary tract infections: a new paradigm for foodborne infections.* FoodMed 2011. Seattle, WA.
- 10/16/11 *Biohunters: How genomic analysis is aiding the fight against bioweapons, global epidemics and deadly food contaminants.* ScienceWriters2011. Flagstaff, AZ.
- 09/11/11 *The origins and evolution of MRSA ST398: through the lens of genome sequencing.* 2nd ASM-ESCMID Conference on Methicillin-resistant Staphylococci in Animals: Veterinary and Public Health Implications. Washington, DC.
- 09/02/11 *Quantifying the human health impacts antibiotic use in food animal production.* North Country Health Grand Rounds. Flagstaff, AZ.
- 06/23/11 *Raised without Antibiotics: Why it matters.* Pew Charitable Trusts Headquarters. Philadelphia, PA.
- 04/16/11 *Multidrug Resistant Staphylococcus aureus in US Meat and Poultry.* American Society for Microbiology Annual Meeting for the Arizona-Southern Nevada Regional Chapter. Flagstaff, AZ.
- 04/14/11 *Look Who's Coming to Dinner: Antibiotic Resistant Bacteria in Meat and Poultry.* Science on Tap. Flagstaff, AZ.
- 03/21/11 *Antibiotic use in food animal production: potential impacts on human health.* Flagstaff Medical Center Seminar Series. Flagstaff, AZ.
- 01/25/11 *Public Health Impacts of Antibiotic Use in Food Animal Production: beyond the traditional foodborne pathogens.* Managing the Risk of Foodborne Hazards: STECs and Antibiotic-Resistant Pathogen Conference. Washington, DC.
- 11/09/10 *Guess Who's Coming to Dinner? What is Being Detected in Meat and Produce.* Pew Scholars Program 25th Anniversary Reunion, Science and Society Session. Duck Key, FL.
- 11/10/10 *Prevalence of high-priority antibiotic resistant bacteria in the US food supply.* 2010 APHA Annual Meeting and Exposition. Denver, CO.
- 09/21/10 *The Penis Microbiome: Uncovering the Impacts of Circumcision.* National Cancer Institute Meeting on the Human Microbiome and Cancer. Rockville, MD.

- 09/14/10 *Multidrug Resistant Staphylococcus aureus from Food Animals: whole genome sequence analysis of clonal complex 398*. Arrowhead Conference Microbial Genomics Conference. Lake Arrowhead, CA.
- 05/29/10 *What is going on in the US? PAMTA*. APUA Roundtable: Strengthening Scientific Evidence to Control Misuse of Antibiotics in Agriculture. Paris, FR.
- 05/04/10 *Antibiotic Resistant Bacteria from Food Animal Production*. Pew Charitable Trusts: Field Team Education and Training. Washington, DC.
- 04/21/10 *Briefing on the Preservation of Antibiotics for Medical Treatment Act (PAMTA)*. MedChi's Public Health Committee, Maryland State Medical Society. Baltimore, MD.

PUBLICATIONS

Peer-Reviewed Manuscripts

Price LB, Stegger M, Hasman H, Aziz M, Larsen J, Andersen PS, Pearson T, Waters AE, Foster JT, Schupp J, Gillece JG, Driebe E, Liu CM, Springer B, Zdovc I, Battisti A, Franco AF, Żmudzki J, Schwarz S, Butaye P, Jouy E, Pomba C, Porrero C, Ruimy R, Smith TC, Robinson A, Weese S, Arriola CS, Yu F, Laurent F, Keim P, Skov R, and Aarestrup F. *Staphylococcus aureus* CC398: host adaptation and emergence of methicillin resistance in livestock. *MBio*. 2012 Feb 21;3(1). pii: e00305-11.

Stegger M, **Price LB**, Larsen A, Gillece JG, Waters AE, Skov R, and Andersen PS. Genome Sequence of *Staphylococcus aureus* Strain 11819-97, an ST80-IV European Community-Acquired Methicillin-Resistant isolate. *J. Bacteriol*. 2012. Mar;194(6):1625-6.

Liu CM, Aziz M, Kachur S, Watson L, Hsueh P, Huang YT, Keim P, **Price LB**. AllBactQuant: An enhanced broad-coverage bacterial quantitative real-time PCR assay targeting the 16S rRNA gene. *BMC Microbiol. In Press*.

Johnson JR, Tchesnokova V, Johnston B, Clabots C, Roberts PL, Billig M, Riddell K, Rogers P, Qin X, Butler-Wu S, **Price LB**, Aziz M, Nicolas-Chanoine M, DebRoy C, Castanheira M, Robicsek A, Hansen G, Urban C, Platell J, Trott D, Zhanel G, Weissman SJ, Cookson BT, Fang FC, Limaye A, Scholes D, Chattopadhyay S, Hooper DC, the RESIST Study Group*, and Sokurenko EV. Emergence of a Single Dominant Multi-Drug-Resistant Strain of Extraintestinal *Escherichia coli* from Sequence Type ST131. *Lancet Infect Dis. Under review*.

Peterson AE, Davis MF, Awantang G, Julian KG, Greene WH, Doppalapudi A, **Price LB**, Waters A, Krain LJ, Nelson LJ, Silbergeld EK, Whitener CJ. Molecular and phenotypic characteristics of health care- and community-associated methicillin-resistant *Staphylococcus aureus* (MRSA) at a tertiary care center in Pennsylvania, 2009-2010. *PLoS ONE. Accepted*.

Keim PS, Aarestrup FM, Shakya G, **Price LB**, Hendriksen RS, Engelthaler DM, Pearson T. Reply to "South Asia instead of Nepal may be the origin of the Haitian cholera outbreak strain". *MBio*. 2011 Nov 1;2(6):e00245-11. doi: 10.1128/mBio.00245-11.

Davis MF, Baron P, **Price LB**, Williams D, Jeyaseelan S, Hambleton I, Diette GB, Breyse PN, McCormack MC. Dry collection and culture methods for recovery of methicillin-susceptible and methicillin-resistant *Staphylococcus aureus* from indoor home environments. *Appl Environ Microbiol*. 2012 Jan 27.

Engelthaler DM, Bowers J, Schupp J, Pearson T, Ginther J, Hornstra HM, Dale J, Stewart T, Komatsu K, Sunenshine R, Waddell V, Levy C, Gillece J, **Price LB**, Contente-Cuomo T, Beckstrom-Sternberg

- S, Blaney DD, Wagner DM, Mayo M, Currie BJ, Keim PS, Tuanyok A. Molecular investigations of a locally acquired case of melioidosis in Southern AZ. *PLoS Negl Trop Dis*. 2011 Oct;5(10):e1347.
- Hendriksen RS, **Price LB**, Schupp J, Gillece J, Kaas RS, Engelthaler DM, Bortolaia V, Upadhyay BP, Pearson P, Waters AE, Shrestha SD, Adhikari S, Shakya G, Keim PS, Aarestrup FM. Population genetics of *Vibrio cholerae* from Nepal, year 2010: An identical clone in Nepal and the Haiti outbreak. *MBio*. 2011 2(4): doi:10.1128/mBio.00157-11.
- Liu CM, Cosetti MK, Aziz M, Buchhagen JL, Contente-Cuomo TL, **Price LB**, Keim PS, Lalwani AK. The Otolitic Microbiome: A study of the bacterial microbiota in a pediatric patient with chronic serous otitis media using 16S rRNA gene-based pyrosequencing. *Arch Otolaryngo Head Neck Surg*. 2011. Jul;137(7):664-8.
- Davis MF, **Price LB**, Liu CM, Silbergeld E. An ecological perspective on U.S. industrial poultry production: the role of anthropogenic ecosystems on the emergence of drug-resistant bacteria from agricultural environments. *Current Opinions in Microbiology*. 2011. Curr Opin Microbiol. 2011 Jun;14(3):244-50.
- Waters A, Contente-Cuomo T, Buchhagen J, Liu CM, Watson L, Pearce K, Foster JT, Bowers J, Driebe E, Engelthaler D, Keim PS, **Price LB**. Multidrug Resistant *Staphylococcus aureus* in US Meat and Poultry: Evidence for animal origins. *Clin Infect Dis*. 2011; 52(10):1227-30.
- Hardy CG, Leila Lackey LG, Cannon J, **Price LB**, and Silbergeld EK. Prevalence of potentially neuropathic *Campylobacter jejuni* strains on commercial broiler chicken products. *Int J Food Microbiol*. 2011; 145:395-9.
- Price LB**, Liu CM, Frankel YM, Melendez JH, Aziz M, Buchhagen J, Contente-Cuomo T, Engelthaler DM, Keim PS, Ravel J, Lazarus GS, and Zenilman JM. Macro-scale spatial variation in chronic wound microbiota: a cross-sectional study. *Wound Repair Regen*. 2011; 19(1):80-8.
- Chen PE, Willner KM, Butani A, Dorsey S, George M, Stewart A, Lentz SM, Cook CE, Akmal A, **Price LB**, Keim PS, Mateczun A, Brahmabhatt TN, Bishop-Lilly KA, Zwick ME, Read TD, Sozhamannan S. Rapid identification of genetic modifications in *Bacillus anthracis* using whole genome draft sequences generated by 454 pyrosequencing. *PLoS ONE*. 2010; 5(8):e12397.
- Wagner DM, Runberg J, Vogler AJ, Lee J, Driebe E, **Price LB**, Engelthaler DM, Fricke WF, Ravel J, Keim P. No resistance plasmid in *Yersinia pestis*, North America. *Emerg Infect Dis*. 2010; 16:885-7.
- Silbergeld E, Davis M, Feingold B, Goldberg A, Graham J, Leibler J, Peterson A, **Price LB**. New infectious diseases and industrial food animal production. *Emerg Infect Dis*. 2010; 16:1503.
- Price LB**, Liu CM, Johnson KE, Aziz M, Lau MK, Bowers J, Ravel J, Keim PS, Serwadda D, Wawer MJ and Gray RH. The effects of circumcision on the penis microbiome. *PLoS ONE*. 2010; 5(1):e8422.
- Melendez JH, Frankel YM, An AT, Williams L, **Price LB**, Wang NY, Lazarus GS, and Zenilman JM. Real-Time PCR Assays compared to Culture-Based Approaches for Identification of Aerobic Bacteria in Chronic Wounds. *Clin Microbiol Infect*. 2010; 16:1762-9.
- Frankel YM, Melendez JH, Wang N, **Price LB**, Zenilman JM, Lazarus GS. Wound microbial flora: molecular microbiology unlocks new horizons. *Arch Dermatol*. 2009; 145:1193-5.

Price LB, Liu CM, Melendez JH, Frankel YM, Engelthaler D, Aziz M, Bowers J, Rattray R, Ravel J, Kingsley C, Keim PS, Lazarus GS, Zenilman JM. Community analysis of chronic wound bacteria using 16S rRNA gene-based pyrosequencing: impact of diabetes and antibiotics on chronic wound microbiota. *PLoS One*. 2009; 31:e6462.

Graham JP, Evans SL, **Price LB**, Silbergeld. Fate of antimicrobial-resistant enterococci and staphylococci and resistance determinants in stored poultry litter. *Environ Res*. 2009; 109:682-9.

Graham JP, **Price LB**, Evans SL, Graczyk TK, Silbergeld EK. Antibiotic resistant enterococci and staphylococci isolated from flies collected near confined poultry feeding operations. *Sci Total Environ*. 2009; 407:2701-10.

Vogler AJ, Birdsall D, **Price LB**, Bowers JR, et al. Phylogeography of *Francisella tularensis*: Global Expansion of a Highly Fit Clone. *J Bacteriol*. 2009; 191:2474-84.

Graham JP, Tuchmann JL, **Price LB**, Otte JM, Pfeiffer DU, Tiensin T, and Silbergeld EK. The Animal:Human Interface and Infectious Disease in Industrial Food Animal Production: Rethinking Biosecurity and Biocontainment. *Public Health Reports*. 2008; 123:282-299.

Silbergeld EK, Graham J, and **Price LB**. Industrial Food Animal Production, Antimicrobial Resistance, and Human Health. *Annu. Rev. Public Health*. 2008; 29:151-69.

Price LB, Graham JP, Lackey L, Roess A, and Silbergeld E. Multidrug resistant *Escherichia coli* among US poultry workers. *Environ Health Perspect*. 2007; 115:1738-1742.

Price LB, Lackey L, Vailes R and Silbergeld E. 2007. The persistence of fluoroquinolone-resistant *Campylobacter* in poultry production. *Environ Health Perspect*. 115:1035-1039.

Price LB, Roess A, Graham JP, Baqar S, Vailes R, Sheikh KA, and Silbergeld E. Neurologic symptoms and neuropathologic antibodies in poultry workers exposed to *Campylobacter jejuni*. *J Occ Environ Med*. 2007; 49:748-55.

Chapin Sapkota AR, **Price LB**, Silbergeld EK and Schwab KJ. Arsenic Resistance in *Campylobacter* spp. Isolated from Retail Poultry Products. *Appl Environ Microbiol*. 2006; 72:3069-7.

Nachman, KE, Graham JP, **Price LB** and Silbergeld EK. Arsenic: a roadblock to potential animal waste management solutions. *Environ Health Perspect*. 2005; 113:1123-4.

Price LB, Johnson E, Vailes R and Silbergeld E. Fluoroquinolone resistant *Campylobacter* from antibiotic-free and conventional poultry products. *Environ Health Perspect*. 2005; 113:557-60.

Price LB, Vogler A, Pearson T, Busch JD, Schupp JM and Keim P. In Vitro Selection and Characterization of *Bacillus anthracis* Mutants with High-Level Resistance to Ciprofloxacin. *Antimicrob. and Chemother*. 2003; 47:2362-2365.

Klevytska, AM, **Price LB**, Schupp JM, Worsham P, Wong J and Keim P. Identification and characterization of variable-number tandem repeats in the *Yersinia pestis* genome. *J. Clin. Microbiol*. 2001; 39:3179-3185.

Jubrias SA, PC Esselman, **LB Price**, ME Cress, Conley KE. Large Energetic adaptations of elderly muscle to resistance and endurance training. *J. Appl. Physiol*. 2001; 90:1663-1670.

Smith KL, DeVos V, Bryden H, **Price LB**, Hugh-Jones ME and Keim P. *Bacillus anthracis* diversity in Kruger National Park. *J. Clin. Microbiol*. 2000; 38:3780-3784.

Price LB and Shand RF. Halocin S8: A 36 amino acid haloarchaeal microhalocin. *J. Bacteriol.* 2000; 182:4951-4958.

Schupp JM, Klevytska AM, **Price LB**, Zinser G and Keim P. *VrrB*: A hypervariable ORF in *Bacillus anthracis*. *J. Bacteriol.* 2000; 182:3989-3997.

Keim P, **Price LB**, Klevytska AM, Smith KL, Schupp JM, Okinaka R, Jackson P and Hugh-Jones ME. Multiple-Locus VNTR analysis (MLVA) reveals genetic relationships within *Bacillus anthracis*. *J. Bacteriol.* 2000; 182:2928-2936.

Keim P, Klevytska AM, **Price LB**, Schupp JM, Zinser G, Smith KL, Hugh-Jones ME, Okinaka R, Hill KK and Jackson PJ. Molecular diversity in *Bacillus anthracis*. *J. Appl. Microbiol.* 1999; 87:215-7.

Smith KL, De Vos V, Bryden HB, Hugh-Jones ME, Klevytska A, **Price LB**, Keim P and Scholl DT. Meso-scale ecology of anthrax in southern Africa: a pilot study of diversity and clustering. *J. Appl. Microbiol.* 1999; 87:204-7.

Schupp, JM, **Price LB**, Klevytska A and Keim P. Internal and flanking sequence from AFLP fragments using ligation-mediated suppression PCR. *Biotechniques.* 1999; 26:905-10.

Price LB, Hugh-Jones M, Jackson PJ and Keim P. Genetic diversity in the protective antigen gene of *Bacillus anthracis*. *J. Bacteriol.* 1999; 181:2358-62.

Porter TL, Eastman MP, Hagerman ME, **Price LB**, and Shand RF. Site-specific prebiotic oligomerization reactions of glycine on the surface of hectorite. *J. Mol. Evol.* 1998; 47:373-377.

Cheung J, Danna KJ, O'Connor EM, **Price LB**, and Shand RF. Isolation, sequence, and expression of the gene encoding halocin H4, a bacteriocin from the halophilic archaeon *Haloferax mediterranei* R4. *J. Bacteriol.* 1997; 179:548-551.

Schupp, J M, Travis SE, **Price LB**, Shand RF and Keim P. Rapid bacterial permeabilization reagent useful for enzyme assays. *Biotechniques.* 1995; 19:18-20.

Online Reports

Otte J, Pfeiffer D, Silbergeld E, **Price L**, and Tiensin T. HPAI risk, biosecurity, and small holder adversity. FAO Policy Brief, 2006. <http://www.fao.org/ag/againfo/projects/en/pplpi/hpai.html>

Book chapters

Shand RF, **Price LB**, and O'Connor EM. 1999. Halocins: protein antibiotics from hypersaline environment. *In*, A. Oren and R.H. Vreeland (ed.), *Microbiology and biogeochemistry of hypersaline environments*. CRC Press, Inc., Boca Raton.