

Monica Keiko Lieng

CONTACT INFORMATION	<i>Phone:</i> (650) 479-5060 <i>E-mail:</i> mlieng@ucdavis.edu	
RESEARCH INTERESTS	Clinical Epidemiology, Telemedicine, Biomedical Informatics	
EDUCATION	University of California, Davis , Davis, California USA <i>Physician Scientist Training Program</i> Ph.D. Student, Epidemiology Graduate Group (2015 -Present) M.D. Student (2013 -Present) Juniata College , Huntingdon, Pennsylvania USA <i>Department of Biology</i> B.S.: Biology; Magna Cum Laude Minors: Visual Fine Arts and Spanish/Hispanic Cultures <ul style="list-style-type: none">• One year study abroad at Universidad San Francisco de Quito, Ecuador (2011-2012)	2013 -Present Dec 2012
HONORS AND AWARDS	UC Davis: <i>Graduate Group in Epidemiology-Block Grant Fellowship</i> UC Davis: <i>Medical Student Research Fellowship</i> Juniata College: <i>Dr. Andrew B. and Maria F. Brumbaugh Science Prize Recipient</i> Bioinformatics Institute: <i>Singapore International Pre-Graduate Award</i> Pennsylvania Health Occupations Students Association: <i>Scholarship Recipient</i> Juniata College: <i>Quinter Scholarship Recipient, Leadership Scholarship Recipient</i> Alleghany Branch of American Society for Microbiology: <i>1st Place Poster in Medical Category</i> UCSF Summer Research Training Program: <i>Amgen Scholar</i> Air Force Association Chapter 116: <i>Scholarship for Students in STEM</i>	Sept 2017 - Present May - Jun 2014 May 2013 Mar - Jun 2013 May 2013 Aug 2009 - Dec 2012 Nov 2012 Jun - Aug 2012 May 2012
RESEARCH EXPERIENCE	University of California, Davis <i>School of Medicine, Division of Pediatrics</i> <ul style="list-style-type: none">• Advisors: James Marcin, MD, MS (Epidemiology)• Project Manager: Evaluating Nurse-Nurse Report Using Telephone vs. Telemedicine• Developed study design and submitted protocols to UC Davis IRB and California-IRB equivalent (Committee for Protection of Human Services) <i>School of Medicine, Division of Pulmonary, Critical Care, Sleep Medicine and Division of Public Health Sciences</i> <ul style="list-style-type: none">• Advisors: Nicholas Anderson, PhD. (Biomedical Informatics), Jason Adams, MD, MS (Critical Pulmonary Care), Jean-Pierre Delplanque, PhD(Mechanical/Aerospace Engineering), Patrick Romano, MD, MPH (Epidemiology)• Developed visual analytic pipeline for processing and annotating flow and pressure data from the PB840 Ventilator.	2017 - Present 2014 - 2017

- Developed algorithms for automated calculation of clinically relevant values, three types of patient ventilator interactions (PVI).
- Supervised undergraduate and medical students in developing analytical skills and technical writing skills.

Bioinformatics Institute of Agency for Science, Technology and Research, Singapore

Division Imaging Informatics

Mar - Jun 2013

- Advisor: Yan Nei Law, Ph.D. (Computer Science)
- Developed algorithms for a classification system that uses second order statistical information for determining mammographic density, a strong breast cancer risk factor.

Juniata College

Department of Biology

Aug - Mar 2013

- Advisor: Regina Lamendella, Ph.D. (Microbial Ecology)
- Lab manager. Instructed new lab members on microbial ecology analytic techniques.
- Studied the effects of resistant starch on gut microbial communities through analysis of high-throughput sequencing data.

University of California, San Francisco

Department of Epidemiology and Biostatistics

May - Aug 2012

- Advisor: Sáunak Sen, Ph.D. (Biostatistics)
- Determined the quantitative trait loci for interhemispheric commissure development in a cross between I/LnJ and C57BL/6J mice strains. The Elliott Sherr neurology lab could then focus their genotyping efforts to find the specific genes that could be causing autism in mice and humans.

Universidad de San Francisco Quito, Ecuador

Colegio de Ciencias Biológicas y Ambientales/ College of Biological and Environmental Sciences
2011 - 2012

- Advisor: Verónica Barragan, M.S. (Microbiology)
- Studied Brucella and Leptospira in pigs in slaughterhouses in relation to human populations throughout Ecuador.

Empiristat

Mar -2011 Jun 2011

- Advisors: Devin Hunt and Nicole Close, Ph.D. (Epidemiology)
- Literature review on the effects of short messaging service use for subject compliance in clinical trials.

Juniata College

Department of Biology

2010 - 2011

- Advisor: Michael Boyle, Ph.D. (Immunology)
- Optimized albumin depletion from fetal bovine serum using binding proteins from bovine group G streptococcal isolates to facilitate proteomic analysis of tissue culture samples grown with fetal bovine serum as a nutrient supplement.
- Compared sensitivity of two *E. coli* probes.

- Advisor: Jill Keeney, Ph.D. (Immunology)
- Investigated if the genes RTT105 and GRH1 were involved in overlapping processes in regulating Ty1 transposition.
- Learned the basic lab techniques of the transposition assay in yeast and sterile technique.

JOURNAL
PUBLICATIONS

1. Adams, J.Y., **Lieng, M.K.**, Kuhn, B.T., Rehm, G.B., Guo, E.C., Taylor, S.L., Delplanque, J.P., Anderson, N.R., Development and Validation of a Multi-Algorithm Analytic Platform (ventMAP) for the Study of Off-Target Mechanical Ventilation. Sci Rep. 2017 Nov 3;7(1):1602.
2. Rehm, G.B., Kuhn, B.T., Delplanque, J.P., Guo, E.C., **Lieng, M.K.**, Nguyen, J., Anderson, N.R., Adam, J.Y. Development of a research-oriented system for collecting mechanical ventilator waveform data. Journal of the American Medical informatics Association. 2017 Oct 28.

CONFERENCES

Presenter name is underlined.

Proceedings

1. Y. N. Law, **M.K. Lieng**, J. Li and A. Khoo. Automated breast tissue density assessment using high order regional texture descriptors in mammography. Proc. SPIE 9035, Medical Imaging 2014: Computer-Aided Diagnosis, 90351Q. March 2014.

Podium Papers

1. **Lieng, M.**, Kuhn, B., Rehm, G., Guo, E., Delplanque, J.P., Anderson, N., Adams, J. (2016). An Automatic, Multi-Algorithm Approach to Classify Ventilator Waveforms. AMIA Symposium. Podium Presentation. November 14th 2016.

Abstracts

1. Adams, JY., **Lieng, MK.**, Kuhn, BT., Rehm, GB., Guo, E., Taylor, S., Delplanque, J.P., Anderson, N. (2017). Development and Validation of a Multi-Algorithm Analytic Platform (ventMAP) for the Automated Detection of Off-Target Mechanical Ventilation. American Thoracic Society Meeting 2016.
2. **Lieng, M.**, Delplanque, JP. Kuhn, B, Anderson, N., Adams, J. Development of a Pipeline for Automated Ventilator Waveform Analysis. AFMR Western Regional Meeting. January 31st, 2015.
3. **Sing, K.**, Apostolides, J.K., Hunt, D.J., Close, N.C. The Effect of Short Messaging Service (SMS) Use for Subject Compliance in Clinical Trials. Society for Clinical Trials Annual Meeting, Vancouver, BC Canada, May 16th, 2011.

SYMPOSIA
PRESENTATIONS

1. **Lieng, M.** Algorithm Development for Automated Ventilator Waveform Analysis. Monthly Scholars Presentation. UC Davis, January 14th, 2016.
2. **Sing, M. Keiko**, Rider, E., Jones-Davis, D., Sherr, E., Sen, S. Is there a genetic basis for abnormal brain development in the I/LnJ mouse strain? UCSF Summer Research Training Program Oral Presentation Session, San Francisco, CA, July 30th, 2012.

POSTERS

1. Maul, A., **Sing K**, Jannson, J., Knight, R., Krauss, R., Lamendella, R. Impact of Resistant Starch Diets on Gut Microbial Community Dynamics. Alleghany Branch of American Society for Microbiology. October 10th, 2012.
2. **Sing, M. Keiko**, Rider, E., Jones-Davis, D., Sherr, E., Sen, S. Is there a genetic basis for abnormal brain development in the I/LnJ mouse strain? UCSF Summer Research Training Program Poster Presentation Session, San Francisco, CA, July 30th, 2012.

3. **Sing, K.**, Boyle, M.D.. Depleting albumin from fetal bovine serum to facilitate proteomic analysis. Landmark Conference Summer Research Symposium, 2010.

TEACHING

Teaching Assistant, UC Davis School of Medicine **2017-Present**

Professor: Patrick Romano, Class: MDS 415

- Developing problem-based learning curriculum for first year medical students.

Employee, Teaching Learning Technology **2009 - 2012**

Organization dedicated to innovating and integratin mainstream applications of technology at Juniata College

- Taught students and staff how to use software for completing their projects.
- Assisted users with network-related problems.
- Assisted professors with audio/visual troubleshooting.

SERVICE

Web Master, Epidemiology Graduate Group Student Committee **2016 - Present**

Student lead committee motivated to improve the quality of education and well being of students in the Epidemiology Graduate Group

- Currently building a repository of resources for students in the Epidemiology graduate group.
- Organize communications with Epidemiology graduate group.
- Attend monthly meetings for coordinating Epidemiology events.

Co-Director, Knights Landing One Health Center **Jan - Dec 2014**

Knights Landing One Health Center is a student run clinic that provides free primary care and translation services to medically uninsured and underinsured.

- Organized in clinic information resources in cloud-accessible database and maintained resource and EMR access rights.
- Oversaw committee on women's health.

Co-Director, Flu Crew **2013 - 2014**

Partnership with UC Davis Department of Pharmacy and Sacramento County Division of Public Health to provide free flu vaccinations in the greater Sacramento Region.

- Developed multi-lingual advertisements and improved injection rates by 100% from previous year.
- Organized 5 community events and coordinated preceptors and volunteers.
- Taught new volunteers how to deliver intra-muscular injections.
- Designed buttons and banner for publicity.

Volunteer, Physicians for Humanity **2013 - 2014**

Non-profit organization dedicated to provide compassionate, socially and globally minded care in Duran, Ecuador. The majority of my efforts were concentrated at Fundación Padre Damián (FPD)

- Painted a mural for clinic beautification at FPD
- Assisted in miscellaneous tasks such as helping in the kitchen, making posters and organizing medications at FPD.
- Assisted in wellness presentations at women's diabetes club.

Volunteer, Health Occupations Students of America **Jan - Oct 2010**

Juniata College Chapter.

- Patient advocate at free breast cancer screening clinic for uninsured Huntingdon residents.
- Won 1st place in HOSA state conference event for Nutrition.

COMPUTER SKILLS	<ul style="list-style-type: none"> • Languages - Python, R, MatLab, HTML, CSS • Applications - Adobe Creative Suite, Microsoft Office, \LaTeX • Operating Systems: Mac OS, Windows
LABORATORY SKILLS	PCR Amplification, DNA Extraction by CTAB, Affinity Protein Purification, Western Blots, SELDI, SDS-PAGE, Yeast Transformation Assay, Medium Preparation, Sterile Technique