Laura Matrajt

Department of Medicine
University of Washington
Guggenheim Hall 414
Box 356423
Seattle, WA 98195-2420 USA

Phone: (206) 667-7006
Fax: (206) 667-4378
E-mail: laurama@uw.edu
http://faculty.washington.edu/laurama/

Research Interests

My primary research interests include the use of mathematical tools to quantify and analyze infectious disease dynamics and optimal intervention policies in Public Health. My primary focus is on the development of mathematical models, both stochastic and deterministic, applied to Public Health and other complex biological systems.

Education

University of Washington, Seattle, Washington USA

Ph.D. Applied Mathematics 2007-2011
Thesis advisor: Dr. Ira M. Longini Jr.

M.S., Applied Mathematics 2009

M.S., Mathematics 2007

Universidad Nacional Autónoma de México, Mexico city, MEXICO

B.A., Mathematics 2005

University of Texas at Austin, Texas, USA

One year exchange program during college 2002

Professional Experience

Department of Medicine, University of Washington/Vaccine and Infectious Disease Institute, Fred Hutchinson Cancer Research Center, Seattle, WA
Postdoctoral fellow December 2011 - present
Dr. Schiffer's Lab
Research includes the development of mathematical models for interactions of the immune system and herpes viruses, including HSV 1, HSV2, Epstein-Barr virus (EBV) and cytomegalovirus (CMV).

Vaccine and Infectious Disease Institute, Fred Hutchinson Cancer Research Center, Seattle, WA
Research Assistant June 2007 - 2011
Supervisors: Dr. Ira Longini and Dr. Betz Halloran.
Research includes the development of mathematical models for interventions and spread of influenza, development of methods in mathematical epidemiology, assessment of current interventions against H1N1 pandemic influenza.

Centro de Investigación en Geografía y Geomática "Ing. Jorge L. Tamayo" A.C., (Centro Geo) Mexico city, Mexico
Research Assistant 2003-2005
Supervisor: Dr. Carmen Reyes
Duties included development curricula for courses in Graph Theory, teaching assistant in graduate level calculus courses.

Publications

Matrajt, L and Longini IM Jr. Critical immune and vaccination thresholds for determining multiple influenza epidemic waves, Epidemics, Volume 4, Issue 1, March 2012, Pages 22-32, ISSN 1755-4365, 10.1016/j.epidem.2011.11.003. (http://www.sciencedirect.com/science/article/pii/S1755436511000570)

Kenah E, Chao DL, **Matrajt L**, Halloran ME, Longini IM Jr. The Global Transmission and Control of Influenza. PLoS ONE. 2011; 6(5): e19515. doi:10.1371/journal.pone.0019515.

Matrajt L, Longini IM. (2010), Optimizing Vaccine Allocation at Different Points in Time during an Epidemic. PLoS ONE. 2010; 5(11): e13767. doi:10.1371/journal.pone.0013767

Chao DL, **Matrajt L**, Nicole NE, Sugimoto JD, Dean B, Bagwell DA, Oiulfstad B, Halloran ME, Longini Jr. IM. Planning control of pandemic influenza H1N1 in Los Angeles County and the US, American Journal of Epidemiology. 2011; 173 (10): 1121-1130.

Yang Y, Sugimoto JD, Halloran ME, Basta NE, Chao DL, **Matrajt L**, Potter G, Kenah E, Longini Jr. IM (2009), The Transmissibility and Control of Pandemic Influenza A (H1N1) Virus. Science. 2009: 729-733.

Basta NE, Chao DL, Halloran ME, **Matrajt L**, Longini Jr. IM. Strategies for Influenza Vaccination of School Children in the US. American Journal of Epidemiology. 2009; 170: 679-686.

Basta NE, Halloran ME, **Matrajt L**, Longini IM. Estimating Influenza Vaccine Efficacy From Challenge and Community-based Study Data. American Journal of Epidemiology. 2008; 168(12):1343-52

Teaching Experience

University of Washington, Seattle, Washington USA
Instructor Summer 2010

- AMATH 381 Introduction to Mathematical Modeling

Teaching Assistant 2005-2007
Duties included running discussion sections, proctoring and grading exams, homework assignments, and midterms, as well as organizing review sessions prior to exams.

- MATH 124: Calculus with Analytic Geometry (Fall, Winter, Spring 2005).
- MATH 120: Precalculus (Summer 2005, Fall 2006).
- MATH 111: Algebra with Applications (Winter and Spring 2006).

Universidad Nacional Autonoma de Mexico (UNAM), Mexico city, Mexico
Teaching Assistant 2004-2005

Duties included running discussion sections, co-teaching lectures, proctoring and grading exams, homework and midterms.

- Topology I,
- Topology II,
- Analytic Geometry I.

Conference Presentations and Workshops

Workshop in Malaria modeling and Control, participant. June 2011, NIMBioS, Knoxville, US.

Optimizing vaccine allocation at different points in time during an epidemic. INFORMS Meeting 2010, Austin, US November 2010.

Critical vaccine and immune thresholds to predict multiple epidemic waves. SMB 2010, Annual Meeting of the Society for Mathematical Biology, Rio de Janeiro, Brazil July 2010.

Critical vaccine and immune thresholds to predict multiple epidemic waves. Poster presented at the Models of Infectious Disease Agent Study (MIDAS) meeting, Washington, DC, May 2010.

One vs. two doses: optimal vaccination strategies for pandemic influenza. EPIDEMICS conference, Athens, Greece, December 2009.

One vs. two doses: optimal vaccination strategies for pandemic influenza. Infectious Disease Agent Study (MIDAS) meeting, Monterey, CA, 2008.

"Variational Principles and Partial Differential Equations", National meeting of the Mexican Mathematical Society, Ensenada, Mexico, October 10-15, 2004.

Mentoring Program for Women in Mathematics, participant, Princeton, NJ, 2002.

Specialized courses

Summer Institute in Statistics and Modeling of Infectious Diseases — June 2010
- Module 3: Infectious Diseases, Immunology and Within-Host Models
- Module 10: Evolutionary Dynamics and Molecular Epidemiology of Viruses

Summer Institute in Statistics and Modeling of Infectious Diseases — June 2009
- Module 4: MCMC Methods for Infectious Disease Studies.
- Module 9: Inference for Graphs and Network Theory in Infectious Diseases.

MITACS-PIMS Summer School on Mathematical Modeling of Infectious Diseases, Edmonton, Canada — May 2008

Escuela de Otoño de Biomatemáticas, Tabasco, Mexico — November 2001

Escuela de Otoño de Biomatemáticas, Guanajuato, Mexico — November 1999

Honors and Awards

Graduate School Top Scholar Award, University of Washington 2005-2006
Complementary funding for one year of Graduate studies.

Beca para estudios de posgrado en el extranjero 2005-2010
Funding for Graduate studies abroad from CONACYT, Mexico.

Reconocimiento por desempeño académico 2003
Award for outstanding academic performance, UNAM, Mexico.

Beca de movilidad estudiantil 2002
Scholarship for studying abroad from UNAM, Mexico. Funding for a one year exchange program at the University of Texas, at Austin.

Computer Skills

Languages: Matlab, Python, familiar in R.
Applications: LaTeX.
Proficient in Maple, Mathematica and Sage.

Language facilities

Spanish (native)
English (fluent)
French (fluent).

Membership in professional societies

AMS (American Mathematical Association)
INFORMS (Institute for Operations Research and Management Science)