

**Gerardo Chowell**  
**Assistant Professor**  
**School of Human Evolution and Social Change**  
**Arizona State University**

School of Human Evolution and Social  
Change  
Arizona State University  
Box 872402  
Tempe, Arizona 85282

Email: [gchowell@asu.edu](mailto:gchowell@asu.edu)  
Tel: (480) 965-4730  
Fax: (480)-965-7671  
website: <http://www.public.asu.edu/~gchowel>

**EDUCATION**

- 2006-2007**      **Postdoctoral Fellow**  
Center for Nonlinear Studies/Mathematical Modeling and Analysis Group, Los  
Alamos National Laboratory
- 2005-2006**      **Director's Funded Postdoctoral Fellow**  
Center for Nonlinear Studies/Mathematical Modeling and Analysis Group, Los  
Alamos National Laboratory
- 2001-2004**      **Ph. D. in Biometry**  
Biological Statistics and Computational Biology, Cornell University,  
Ithaca, New York 14853  
*Conferral: January 19, 2005.*
- 1997-2001**      **Engineering in Telematics**  
College of Telematics, Universidad de Colima, Mexico  
August 1997 - June 2001

**Additional Affiliations:**

Division of Population Studies, Fogarty International Center      June 2008 – present  
National Institutes of Health

**PROFESSIONAL EXPERIENCE**

- 08/07 - present      **Assistant Professor**  
School of Human Evolution and Social Change, Arizona  
State University
- 03/07- 08/07      **Postdoctoral Fellow**  
Center for Nonlinear Studies/Mathematical Modeling and  
Analysis Group, Los Alamos National Laboratory
- 03/05 – 03/07      **Director's Funded Postdoctoral Fellow**

06/04 – 08/04	Center for Nonlinear Studies/Mathematical Modeling and Analysis Group, Los Alamos National Laboratory <b>Mathematical and Theoretical Biology Institute</b> <b>Arizona State University/Los Alamos National Laboratory</b> Graduate Research Assistant Los Alamos, New Mexico
01/03 – 01/04	<b>Staff Research Employee</b> Center for Nonlinear Studies (CNLS) Los Alamos National Laboratories Staff Research Employee Los Alamos, New Mexico
05/02 – 08/02	<b>Graduate Research Assistant</b> Theoretical Division (T-7 Group) Los Alamos National Laboratory Los Alamos, New Mexico
06/00 – 08/00	<b>Research Assistant</b> Mathematical and Theoretical Biology Institute Summer Research Program Cornell University Ithaca, New York

## HONORS

**Recognized by Chicano/Latino Faculty and Staff Association, Arizona State University**  
*Selected by financial magazine 'Poder y Negocios' as one of 100 professors who were born in Mexico and are now teaching and making waves in the United States*  
Tempe, Arizona  
November 1<sup>st</sup>, 2007

**Director's Funded Postdoctoral Fellowship (2005-2006)**  
Los Alamos National Laboratory, Los Alamos, New Mexico.

***National Prize for Youth 2002 (Premio Nacional de la Juventud 2002) for academic merits***  
Instituto Mexicano de la Juventud, Government of Mexico, DF, November 24, 2003. Award includes Diploma signed by Mexican President Vicente Fox, Gold Medal, and 110,000 Mexican pesos (more than \$9,800 dollars)  
*(see addendum)*

***National Prize for Youth 2000 (honorific mention for academic merits)***  
Instituto Mexicano de la Juventud, Government of Mexico, Mexico, DF, January 2002

***State Prize for Youth 2000 (Premio Estatal de la Juventud 2000) for academic merits***  
Instituto Mexicano de la Juventud, Colima, Mexico, December 2001

***"Premio Peña Colorada" AWARD for academic merits***  
Consortio Minero Benito Juarez, Colima, Col. Mexico, December 2001

***"Arq. Rodolfo Chavez Carrillo" AWARD for academic merits***

Bachillerato Tecnico No.1, Universidad de Colima, Mexico, November 1997  
Award includes Diploma and Gold Medal.

**TELMEX Scholarship**, TELMEX Foundation, September 1999 June 2001

***Academic Excellence Recognition***, Universidad de Colima, 1997-2000

***Creativity Contest***, 3rd place, College of Telematics, Universidad de Colima, 1998

***National Contest of Informatics (Mexico)***, 4th place, Instituto Tecnologico Autonomo de Mexico, July 1997.

***Science Contests at the Universidad de Colima, Mexico:***

***Differential Calculus state contest***, 1st place, May 1997

***Analytic Geometry state contest***, 1st place, December 1996

***Trigonometry state contest***, 2nd place, June 1996

***Organic Chemistry state contest***, 2nd place, December 1996

***Inorganic Chemistry state contest***, 1st place, June 1996

## RESEARCH INTERESTS

Mathematical modeling of the spread of emerging and re-emerging infectious diseases, model validation, social networks, statistical methods in medicine, statistical applications to epidemiology, and agent-based modeling.

## Peer-Reviewed Publications

### Books

**G. Chowell**, J.M. Hyman, L.M. Bettencourt, C. Castillo-Chavez (Eds.) *Mathematical and Statistical Estimation Approaches in Epidemiology*. Springer (2009).

### In Press

A.L. Rivas, **G. Chowell**, Schwager SJ, Fasina FO, Hoogesteijn AL, Smith SD, Bisschop SP, Anderson KL, Hyman, JM. Lessons from Nigeria: the role of roads in the geo-temporal progression of avian influenza (H5N1) virus. **Epidemiology and Infection**. In Press (2009).

D. Rios-Doria, **G. Chowell**. Qualitative analysis of the level of cross-protection between epidemic waves of the 1918-1919 influenza pandemic. **Journal of Theoretical Biology**. In Press (2009).

### Published

**G. Chowell**, S.M. Bertozzi, M. Arantxa Colchero, H. Lopez-Gatell, C. Alpuche-Aranda, M. Hernandez, M.A. Miller. Severe Respiratory Disease Concurrent with H1N1 Influenza Circulation. **THE NEW ENGLAND JOURNAL OF MEDICINE** 361:674-679 (2009).

C V Munayco, J Gómez, V A Laguna-Torres, J Arrasco, T J Kochel, V Fiestas, J Garcia, J Perez, I Torres, F Condori, H Nishiura, **G Chowell**. Epidemiological and transmissibility analysis of influenza A(H1N1)v in a southern hemisphere setting: Peru. **Eurosurveillance** 14(32), 2009

**G. Chowell**, C. Munayco, A.A. Escalante, F.E. McKenzie. The spatial and temporal patterns of falciparum and vivax malaria in Peru: 1994-2006. **The Malaria Journal** 8:142 (2009).

H. Nishiura, C. Castillo-Chavez, M. Safan, **G. Chowell**. Transmission potential of the new influenza A(H1N1) virus and its age-specificity in Japan. **Eurosurveillance** 14 (2009).

H. Nishiura, **G. Chowell**, H. Heesterbeek, J. Wallinga. The ideal reporting interval for an epidemic to objectively interpret the epidemiological time course. **JOURNAL OF THE ROYAL SOCIETY INTERFACE**. In press (2009).

Rivas AL, Chaffer M, **Chowell G**, Elad D, Koren O, Smith SD, Schwager SJ. Optimization of Epidemiologic Interventions: Evaluation of Spatial and Non-Spatial Methods That Identify John's Disease-Infected Subpopulations Targeted for Intervention. **Israel Journal of Veterinary Medicine** 63, 2008, 59-71.

T. L. Burr, **G. Chowell**. The reproduction number  $R(t)$  in structured and non-structured populations. **Mathematical Biosciences and Engineering** 6 (2009).

H. Nishiura, **G. Chowell**. Rurality and pandemic influenza: geographic heterogeneity in the risks of infection and death in Kanagawa Prefecture, Japan, from 1918-19. **The New Zealand Medical Journal** 121(1284):18-27 (2008).

M. Nuno, T. A. Reichert, **G. Chowell**, A. B. Gumel. Protecting residential care facilities from pandemic influenza. **PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES** 105, 10625-30 (2008).

**G. Chowell**, P. Diaz-Duenas, D. Chowell, S. Hews, J. Ceja-Espiritu, J. M. Hyman, C. Castillo-Chavez. Diagnostic delays and epidemiology of dengue fever during the 2002 epidemic in Colima, Mexico. **Dengue Bulletin** 2008.

**G. Chowell**, N.W. Hengartner, C.E. Ammon, J.M. Hyman. Learning from the past to prepare for the future: Modeling the impact of hypothetical interventions during the great influenza pandemic of 1918. **Chance** 21(2) , 55-60 (2008)

**G. Chowell**, C.A. Torre, C. Munyaco-Escate, L. Suárez -Ognio, R. López-Cruz, J.M. Hyman, C. Castillo-Chavez. Spatial and temporal dynamics of dengue fever in Peru: 1994-2006. **Epidemiology and Infection** 36(6):852-64 (2008).

**G. Chowell**, H. Nishiura. Quantifying the transmission potential of pandemic influenza. **Physics of Life Reviews** 5, 50-77 (2008)

**G. Chowell**, L.M.A. Bettencourt, N. Johnson, W.J. Alonso, C. Viboud. The 1918-1919 influenza pandemic in England and Wales: Spatial patterns in transmissibility and mortality impact. **PROCEEDINGS OF THE ROYAL SOCIETY B** 275, 501-509 (2008)

T.L. Burr and **G. Chowell**. Signatures of non-homogeneous mixing in disease outbreaks. **Math. Comp. Model.** 48,122-140 (2008).

\* A. B. Gumel, M. Nuno, **G. Chowell**. Mathematical assessment of Canada's pandemic influenza preparedness plan. **Can. J. Inf. Dis. & Med. Microb.** 19, 185-192 (2008).

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\* [Awarded the Dr. L.E. Nicolle Award, the Founding Editor-in-Chief of The Canadian Journal of Infectious Diseases & Medical Microbiology]

H. Nishiura and **G. Chowell**. Household and community transmission of the Asian influenza A (H2N2) and influenza B viruses in 1957 and 1961. **Southeast Asian J. Trop. Med. Pub. Health** 38(6), 1075-1083 (2007).

**G. Chowell**, M. Miller, C. Viboud. Seasonal influenza in the United States, France, and Australia: Transmission and Prospects for control. **Epidemiology and Infection** 36(6):852-64 (2008).

M. Chaffer, A. L. Rivas, D. Elad, O. Koren , S. Garazi, **G. Chowell**, S. J. Schwager. Receiver operating characteristic (ROC)-based assessment of a serological test used to detect Johne's Disease in Israeli dairy herds. **Can. J. Vet. Res.** 72:18-26 (2008).

**G. Chowell**, C. E. Ammon, N. W. Hengartner, J. M. Hyman. Estimating the reproduction number from the initial phase of the of the Spanish flu pandemic waves in Geneva, Switzerland. **Math. Biosci. Eng.** 4, 457-470 (2007).

L.M.A. Bettencourt, R.M. Ribeiro, **G. Chowell**, T. Lant, C. Castillo-Chavez. Towards real time epidemiology: data assimilation, modeling and anomaly detection of health surveillance data streams. **Special Volume on Biosurveillance Systems. Lecture Notes in Computer Science. Springer Verlag Vol.** 4506, 79-90 (2007).

R. I. Rodríguez-Vivas, A. L Rivas, **G. Chowell**, H. Fragoso, R. Rosario, Z. Garcia, S. D Smith, J. J. Williams, S. J. Schwager. Spatial distribution of acaricide profiles (Boophilus microplus strains susceptible or resistant to acaricides) in southeastern Mexico. **Veterinary Parasitology** 146(1-2):158-69 (2007).

**G. Chowell**, P. Diaz-Duenas, J. C. Miller, A. Alcazar-Velazco, J.M. Hyman, P.W. Fenimore, C. Castillo-Chavez. Estimation of the reproduction number of dengue fever from spatial epidemic data. **Math. Biosci.** 208:571-89 (2007).

**G. Chowell**, H. Nishiura, L.M.A. Bettencourt. Comparative estimation of the reproduction number for pandemic influenza from daily case notification data. **JOURNAL OF THE ROYAL SOCIETY INTERFACE** 4, 155-166 (2007).

M. Nuno, **G. Chowell**, X. Wang, C. Castillo-Chavez. On the role of cross-immunity and survival of less-fit flu strains. **Theor. Pop. Biol.** 71 20-29 (2007).

M. Nuno, **G. Chowell**, A. Gumel. Assessing Basic Control Measures, Antivirals and Vaccine in Curtailing Pandemic Influenza: Scenarios for the US, UK, and the Netherlands. **JOURNAL OF THE ROYAL SOCIETY INTERFACE** 22;4(14):505-21 (2007).

T. L. Burr, **G. Chowell**. Observation and model error effects on parameter estimates in the susceptible-infected-recovered epidemiological model. **Far East. J. Theor. Stat.** 19(2), 163-183 (2006)

**G. Chowell**, F. Sanchez, Climate-based descriptive models of dengue fever: The 2002 epidemic in Colima, Mexico. **J. Env. Health** 68 (10) Jun (2006).

**G. Chowell** , C. E. Ammon, N. W. Hengartner, J. M. Hyman. Estimation of the reproductive number of the Spanish Flu epidemic in Geneva, Switzerland. Proceedings of the Second European Influenza Conference (St. Julians, Malta, September, 2005). **Vaccine** 24, 6747-6750

(2006)

**G. Chowell**, P. Diaz-Duenas, R. Bustos-Saldana, A. Aleman-Mireles, and V. Fet. Epidemiological and Clinical Characteristics of Scorpionism in Colima, Mexico (2000-2001). **Toxicon** 47(7), 753-758 (2006).

**G. Chowell**, C. E. Ammon, N. W. Hengartner, J. M. Hyman. Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions. **J. Theor. Biol.** 241(2), 193-204 (2006).

L. Rivas, B. Kunsberg, **G. Chowell**, S. D. Smith, J. M. Hyman, S. J. Schwager. Human-mediated foot-and-mouth disease epidemic dispersal: disease and vector clusters. **J. Vet. Med.** B 53, 1-10 (2006).

**G. Chowell**, E. Shim, F. Brauer, P. Diaz-Duenas, J. M. Hyman, C. Castillo-Chavez. Modeling the transmission dynamics of Acute Hemorrhagic Conjunctivitis: Application to the 2003 outbreak in Mexico. **Stat. Med.** 25(11), 1840-1857 (2006).

**G. Chowell**, A. L. Rivas, N. W. Hengartner, J. M. Hyman, C. Castillo-Chavez. The role of spatial mixing in the spread of foot-and-mouth disease. **Prev. Vet. Med.** 73, 297-314 (2006).

**G. Chowell**, A. L. Rivas, S. D. Smith, J. M. Hyman. Identification of case clusters and counties of greater infective connectivity in the 2001 Uruguayan foot-and-mouth disease epidemic. **Am. J. Vet. Res.** 67(1), 1-12 (2006).

**G. Chowell**, J. M. Hyman, P. Diaz-Duenas, N. W. Hengartner. Predicting scorpion sting incidence in an endemic region using climatological variables. **Int. J. Env. Health Res.** 15(6), 425-435 (2005).

**G. Chowell**, P. Diaz-Duenas, and D. Chowell. The dynamics of pulmonary tuberculosis in Colima, Mexico (1999-2002). **Scand. J. Infect. Dis.** 37(11), 858-862 (2005).

J. Gjorgjieva, K. Smith, **G. Chowell**, F. Sanchez, J. Snyder, and C. Castillo-Chavez. The role of vaccination in the control of SARS. **Math. Biosci. Eng.** 2(4), 753-769 (2005)

**G. Chowell**, C. Castillo-Chavez, P. Diaz-Duenas. Characterization of an outbreak of Acute Hemorrhagic Conjunctivitis. **Digital J. Ophthalm.** 11/1 (2005).

P. Diaz-Duenas, **G. Chowell**, G. Ceja, T. C. D'Auria, R. C. Lloyd, C. Castillo-Chavez. Pediatric electrocardiograph abnormalities following *Centruroides limpidus tecomanus* scorpion envenomation. **Toxicon** 45(1), 27-31 (2005)

**G. Chowell**, N. W. Hengartner, C. Castillo-Chavez, P. W. Fenimore, and J. M. Hyman. The reproductive number of ebola and the effects of public health measures: The cases of Congo and Uganda. **J. Theor. Biol.** 229(1), 119-126 (2004)

**G. Chowell**, C. Castillo-Chavez, P.W. Fenimore, C. Kribs-Zaleta, L. Arriola, J.M. Hyman. Model parameters and outbreak control for SARS. **EMERGING INFECTIOUS DISEASES** 10 (7) (2004).

**G. Chowell**, J. M. Hyman, S. Eubank, C. Castillo-Chavez. Scaling laws for the movement of people between locations in a large city. **Phys. Rev. E** 68 (2003).

**G. Chowell**, P.W. Fenimore, M.A. Castillo-Garsow, C. Castillo-Chavez. SARS outbreaks in Ontario, Hong Kong and Singapore: the role of diagnosis and isolation as a control mechanism. **J. Theor. Biol.** 24, 1-8 (2003).

## **Book Chapters**

**G. Chowell**, A. Colchero, S.M. Bertozzi. Modelos de transmisión de influenza y la estimación del ritmo reproductivo de la nueva influenza A(H1N1) en México. Ponce de Leon, S., Hernandez-Avila, M., Cordova-Villalobos, J.A (Eds.). La Epidemia de Influenza A/H1N1 en Mexico. La situación hasta Junio 02, 2009 (Forthcoming).

**G. Chowell**, F. Brauer. The basic reproduction number of infectious diseases: Computation and estimation using compartmental epidemic models. In: Mathematical and Statistical Estimation Approaches in Epidemiology. Chowell et al. (Eds) **Springer** (2009).

D. Rios-Doria<sup>#</sup>, **G. Chowell**, C. Munayco-Escate, A. Witthembury, C. Castillo-Chavez. Spatial and temporal dynamics of rubella in Peru, 1997-2006: Geographic patterns, age at infection and estimation of transmissibility. In: Mathematical and Statistical Estimation Approaches in Epidemiology. Chowell et al. (Eds) **Springer** (2009).

H. Nishiura, **G. Chowell**. The effective reproduction number as a prelude to statistical estimation of time-dependent epidemic trends. In: Mathematical and Statistical Estimation Approaches in Epidemiology. Chowell et al. (Eds) **Springer** (2009).

**G. Chowell** and C. Castillo-Chavez. Worst-Case scenarios and epidemics. Mathematical and Modeling Approaches to Homeland Security (2003), T. Banks, C. Castillo-Chavez Eds. Frontiers in Applied Mathematics Vol. 28 (SIAM, Philadelphia, 2003).

**G. Chowell**, A. L. Rivas, N. W. Hengartner, J. M. Hyman, C. Castillo-Chavez. Critical response to post-outbreak vaccination against foot-and-mouth disease. Modeling The Dynamics of Human Diseases: Emerging Paradigms and Challenges. **AMS Cotemporary Mathematics Series** Vol. 410, pp. 73-87. Gumel A. (Chief Editor), Castillo-Chavez, C., Clemence, D.P. and R.E. Mickens (2006).

**G. Chowell**, A. Cintron-Arias, S. Del Valle, F. Sanchez, B. Song, J. M. Hyman, H. W. Hethcote, C. Castillo-Chavez. Mathematical applications associated with the deliberate release of infectious agents. In: Modeling The Dynamics of Human Diseases: Emerging Paradigms and Challenges. **AMS Cotemporary Mathematics Series** Vol. 410. pp. 51-71. Gumel A. (Chief Editor), Castillo-Chavez, C., Clemence, D.P. and R.E. Mickens (2006).

## **Other Publications**

**PhD Thesis:** Mathematical Models for Emergent and Re-Emergent Infectious Diseases:

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<sup>#</sup> Graduate student

Assessing the Effects of Public Health Interventions. Cornell University, Adviser: Carlos Castillo-Chavez.

Related Media article:

To escape flu - move to the country

<http://www.telegraph.co.uk/earth/main.jhtml?xml=/earth/2007/12/19/sciflu119.xml>

*Deterministic and Stochastic Reaction-diffusion Models in a Ring*

Technical report for the Mathematical and Theoretical Biology Institute (MTBI), Cornell University, Ithaca, New York, Summer 2000.

*Disease Dynamics on Small-world and other Networks*

Technical report for the Mathematical and Theoretical Biology Institute (MTBI), Cornell University, Ithaca, New York, Summer 2001

## Major Media Articles on Research

**ASU Research Stories.** Lessons from Pandemics Past (July 27, 2009)

Available online: <http://researchstories.asu.edu/stories/lessons-pandemics-past-1248>

**REUTERS.** Mexican swine flu victims were young, some healthy. (June 29, 2009)

Available online: <http://www.reuters.com/article/asiaCrisis/idUSN29361190>

**Guardian.co.uk** Younger people 'should get swine flu vaccine first' (June 30, 2009)

Available online: <http://www.guardian.co.uk/lifeandstyle/besttreatments/2009/jun/30/younger-people-should-get-swine-flu-vaccine-first>

**United Press International.** Health News. H1N1 influenza shifted to younger people (July 01, 2009)

Available online: [http://www.upi.com/Health\\_News/2009/07/01/H1N1-influenza-shifted-to-younger-people/UPI-72161246424136/](http://www.upi.com/Health_News/2009/07/01/H1N1-influenza-shifted-to-younger-people/UPI-72161246424136/)

**First Science.** ASU scientist: Study of first wave of swine flu requires revised public health strategies (June 30, 2009). Available one: [http://www.firstscience.com/home/news/breaking-news-all-topics/asu-scientist-study-of-first-wave-of-swine-flu-requires-revised-public-health-strategies\\_66317.html](http://www.firstscience.com/home/news/breaking-news-all-topics/asu-scientist-study-of-first-wave-of-swine-flu-requires-revised-public-health-strategies_66317.html)

**Science Daily.** First Wave Of Swine Flu Hit Young People Harder Than Expected (July 05, 2009)

Available online: <http://www.sciencedaily.com/releases/2009/06/090629200800.htm>

**ASU News.** ASU scientist: Swine flu study requires revised public health strategies (June 29, 2009)

Available online: [http://asunews.asu.edu/20090629\\_swineflustudy](http://asunews.asu.edu/20090629_swineflustudy)

**ASU News.** Study outlines minimizing pandemic flu in nursing homes (July 28, 2008)

Available online: [http://asunews.asu.edu/20080722\\_flustudy](http://asunews.asu.edu/20080722_flustudy)

**The Telegraph (UK).** Can we obtain enough drugs in a pandemic? (December 13, 2006)

Available online:

<http://www.telegraph.co.uk/connected/main.jhtml?%20view=DETAILS&grid=A1&xml=/connected/2006/12/13/ecnpan13.xml>

**The Washington Post.** A Model of Epidemic Control  
Scientists Chart, Laud Canada's Rapid Response to SARS

Available online: <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&contentId=A8128-2003May2&notFound=true>

## **TEACHING ACTIVITIES**

### **Spring 2008**

**ASB/SSH 100.** Introduction to Global Health (Co-taught with Prof. Magdalena Hurtado).  
(190 students)

**SSH 590.** Reading and Conference.

### **Fall 2008**

**ASB/SSH 100.** Introduction to Global Health (Co-taught with Prof. Magdalena Hurtado).  
(400 students)

**SSH 590, SSH 790.** Reading and Conference.

## **RESEARCH GRANT SUPPORT**

### **Past Funding**

PI, World Health Organization, January-October of 2008, Initiative for Vaccine Research, \$52,000

### **Current funding**

NIH IPAS: Infectious Disease Dynamics, Fogarty International Center, National Institute of Health, \$51,250

CO-PI, National Science Foundation. Collaborative Research: Urban Vulnerability to Climate Change: A System Dynamics Analysis. PI: Sharon Harlan. Start date: 09/01/08 (36 months), \$1,304,610.00.

CO-PI, National Science Foundation. AOC: Social Dynamics in Response to Shifting Immigration Policy and Practice: Latino Social Networks, Resource Flow, and Household Reorganization. PI: Jennifer Glick. Start date: 08/15/08, \$747,249.

## **RESEARCH EXPERIENCE**

### **Mathematical Modeling and Analysis/Center for Nonlinear Studies**

#### **Los Alamos National Laboratory**

Postdoctoral Fellow

March 2007 - present

### **Mathematical Modeling and Analysis/Center for Nonlinear Studies**

#### **Los Alamos National Laboratory**

Director's Funded Postdoctoral Fellow

March 2005 – March 2006

### **Mathematical Modeling and Analysis**

#### **Los Alamos National Laboratory**

Graduate Research Assistant

Los Alamos, New Mexico

August 2004 – December 2004

### **Mathematical and Theoretical Biology Institute**

#### **Arizona State University/Los Alamos National Laboratory**

Graduate Research Assistant

Los Alamos, New Mexico

June 2004 - August 2004

### **Center for Nonlinear Studies (CNLS)**

#### **Los Alamos National Laboratories**

Staff Research Employee

Los Alamos, New Mexico

January 2003 – January 2004

**Theoretical Division (T-7 Group)**  
**Los Alamos National Laboratory**  
Graduate Research Assistant  
Los Alamos, New Mexico  
Summer of 2002

**The Spanish Agency of International Cooperation: Intercampus Program**  
Escuela Superior de Ingenieria, Universidad de Cadiz, Spain  
February 2001- March 2001

**Mathematical and Theoretical Biology Institute**  
Cornell University, Ithaca, New York, Summers of 2000 and 2001

## **EDITORIAL BOARDS**

Member. SIAM Undergraduate Research Online (- 2009)

## **COMMITTEES**

10/19- 10/20/07	National Research Council	Committee on Technical Input on the Supplemental Final Environmental Impact Report for the Biosquare Phase II Project.
03/08 – 05/02/08	National Research Council	Technical Input on Any Additional Studies to Assess Risk Associated with Operation of the National Emerging Infectious Diseases Laboratory, Boston University: A Letter Report (2008) Board on Life Sciences (BLS) <a href="http://books.nap.edu/openbook.php?record_id=12208&amp;page=1">http://books.nap.edu/openbook.php?record_id=12208&amp;page=1</a>

## **STUDENT MENTORING**

Summer of 2008  
Daniel Rios-Doria (Mathematics & Statistics department, Arizona State University): Summer 2008  
Project: Modeling susceptibility in epidemic spread.

Summer of 2007  
Carlos A. Torre (Mathematics & Statistics department, Arizona State University): Summer 2008  
Project: Spatial and temporal dynamics of dengue in Peru

Summer of 2006  
Sarah Hews (Mathematics & Statistics department, Arizona State University): Summer 2006  
Project: Clinical and Climatological Analysis of the 2002 Dengue Fever Epidemic in Colima, Mexico.

Summer of 2005

Benjamin Kunsberg (Mathematics department, The Johns Hopkins University): Summer 2005  
Project: Human-mediated foot-and-mouth disease epidemic dispersal (published in J. Vet. Med. B, 2005)

Summer of 2004

Julijana Gjorgjieva (Mathematics department, Harvey Mudd College): Summer of 2004

Kelly Smith (Mathematics department, Clarion University of Pennsylvania)

Jessica Snyder (College of Sciences, Georgia Institute of Technology)

Project: The role of vaccination in the control of SARS (published in Math. Biosci. Eng., 2005)

## **ORAL AND POSTER PRESENTATIONS**

### **Plenary session speaker: Models of influenza transmission**

Modeling adaptive vaccination strategies in the context of the novel swine-origin influenza A(H1N1) virus in Mexico

High Level Meeting on Lessons Learned from the Flu A H1 N1

Cancún, Quintana Roo,

July 2-3, 2009

### **Session speaker: Modeling adaptive vaccination strategies: Mexico as a case study**

SIAM Annual Meeting

Denver, Colorado

July 10, 2009

### **Invited speaker: Patterns of influenza transmissibility and mortality**

Center for Infectious Diseases Dynamics

The Pennsylvania State University

March 6, 2009

State College, PA

### **Invited speaker: Models of Transmission and Control for Seasonal and Pandemic Influenza**

School of Public Health

Universidad Autonoma de Guadalajara

13 January 2009

Guadalajara, Mexico

### **Keynote speaker: Comparative estimation of the reproduction number of influenza**

$R_0$  and related concepts: methods and illustrations

29 October 2008

Paris, France

### **Evaluating vaccination strategies against pandemic influenza: Mexico as a case study**

Quantitative Immunization and Vaccines Related Research (QUIVER) Advisory

Committee – The World Health Organization

21 October 2008

Geneva, Switzerland

### **Invited talk: Seasonal and pandemic influenza: Transmissibility and mortality patterns**

The 18th Annual Meeting of the Japanese Society for Mathematical Biology

Session on Dynamics and evolution of infectious Diseases

Kanbai-kan, Doshisha University, Kyoto, Japan

September 16, 2008

**Invited talk: Signatures of non-homogenous mixing in disease outbreaks**

Mathematical Epidemiology Workshop

Banff, Alberta, Canada

July 30, 2008

**Invited talk: Modeling the spread of infectious diseases in space and time: Foot and mouth disease and influenza as examples.**

Estrella Mountain Community College

Avondale, AZ

April 25, 2008

**Invited talk: The 1918-19 influenza pandemic in England and Wales: Patterns of transmissibility and mortality impact**

Special Session on Recent Advances in Mathematical Biology, Ecology, and Epidemiology

American Mathematical Society Annual Meeting

San Diego, California

January 7, 2008

**Colloquium: The 1918-19 influenza pandemic in England and Wales: Patterns of transmissibility and mortality impact**

Department of Mathematics

University of Florida

Gainesville, Florida

December 3, 2007

**Invited talk: Patterns of transmissibility and mortality impact: The case of foot-and-mouth disease and influenza**

Austrian Academy of Sciences & Institute of Advances Studies

Vienna, Austria

November 19-20

**Invited talk: Transmission and control of influenza epidemics and pandemics**

Epidemiology Session-Annual meeting of the Society of Mathematical Biology

San Jose, California

August 1, 2007

**The role of spatial heterogeneity in the spread of infectious diseases**

Conference on Mathematical and Computational Population dynamics

Campinas, Brazil

July 17, 2007

**Understanding the spread of infectious diseases: Linking models to data**

Los Alamos Summer School

Los Alamos & UNM

Los Alamos, NM

June 25, 2007

**Invited talk: Transmissibility of historical pandemics and epidemics of influenza: prospects for control**

Fogarty International Center

National Institutes of Health  
Bethesda, MD  
June 05, 2007

**Colloquium: Patterns of transmissibility and mortality impact during the 1918-19 influenza pandemic**

School of Human Evolution and Social Change  
Arizona State University  
Tempe, AZ  
May 07, 2007

**Colloquium: Transmission dynamics of infectious diseases in space and time**

Mathematics and Statistics Department  
Arizona State University  
Tempe, AZ  
April 20, 2007

**Invited Talk: Quantifying the Transmissibility of Seasonal and Pandemic Influenza**

Workshop on the Mathematics of Global Public Health  
Arizona State University  
Tempe, AZ  
March 10, 2007

**Invited Talk: Modeling and Estimation in the Transmission Dynamics of Infectious Diseases**

Ecosystem Models Working Group  
Santa Fe Institute  
Santa Fe, New Mexico  
February 13, 2007

**Invited Talk: Quantifying the Transmissibility of Seasonal and Pandemic Influenza**

Arizona Days Meeting  
Tucson, Arizona  
February 08, 2007

**Invited Talk: Comparative estimation of the reproduction number for pandemic influenza**

Recent advances in Mathematical Biology, Epidemiology and Ecology  
AMS Annual Meeting  
New Orleans  
January 08, 2007

**Invited Talk: Transmission and control of seasonal and pandemic influenza**

Blackwell-Tapia Conference organized by the Institute of Mathematics and its Applications  
Minneapolis, Minnesota  
November 04, 2006

**Talk: Learning from the Spanish Flu Pandemic in Geneva, Switzerland**

SACNAS Annual Meeting. Session of Multidisciplinary Approaches to Biological and Computational Systems Research  
Tampa, Florida  
October 28, 2006

**Invited Talk: Transmission and Control of Seasonal and Pandemic Influenza**

DIMACS Workshop on models of co-evolution of hosts and pathogens  
Piscataway, New Jersey  
October 10, 2006

**Invited Talk: SARS outbreaks in Ontario, Hong Kong and Singapore: The role of rapid diagnosis and effective isolation as control mechanisms**

DIMACS Workshop on facing the challenges of infectious diseases in Africa: The role of mathematical modeling  
Johannesburg, South Africa  
September 26, 2006

**Poster: Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions.**

DIMACS Workshop on facing the challenges of infectious diseases in Africa: The role of mathematical modeling  
Johannesburg, South Africa  
September 26, 2006

**Poster: The role of spatial mixing in the spread of foot-and-mouth disease: The 2001 epidemic in Uruguay**

DIMACS Workshop on facing the challenges of infectious diseases in Africa: The role of mathematical modeling  
Johannesburg, South Africa  
September 26, 2006

**Talk: The Reproduction Number of the Spanish Flu Pandemic in Geneva, Switzerland**

Session: Recent Advances in Mathematical Epidemiology  
SMB-SIAM Conference on the Life Sciences  
Durham, North Carolina  
August 01, 2006

**Invited Talk: Transmission and Control of Seasonal and Pandemic Influenza**

Summer Teacher Institute, Super Computing Challenge  
Santa Fe Indian School  
Santa Fe, New Mexico  
July 21, 2006

**Invited Talk: Estimating the reproduction number of the Spanish Flu pandemic in Geneva, Switzerland**

Session: Applications of dynamical systems in biology  
SIAM Annual Meeting  
July 11, 2006  
Boston, MA

**Talk: Generalized Interventions Against Pandemic Influenza**

12<sup>th</sup> International Congress on Infectious Diseases  
Influenza and Vaccines Session  
Lisbon, Portugal  
June 17, 2006

**Talk: Transmission and Control of Seasonal and Pandemic Influenza**

Postdoc Seminar  
Center for Nonlinear Studies, Los Alamos National Laboratory  
Los Alamos, NM  
May 11, 2006

**Invited talk: Transmission and Control of Seasonal and Pandemic Influenza**

Seminar of the Mathematics and Statistics Department  
Arizona State University  
Tempe, AZ  
April 28, 2006.

**Poster: Estimation of the reproductive number of the Spanish Flu epidemic in Geneva, Switzerland.**

International Conference on Emerging Infectious Diseases  
Atlanta, Georgia  
March 21, 2006.

**Invited Talk: Estimation of the reproductive number of the Spanish Flu epidemic in Geneva, Switzerland.**

Session of Ecology and Epidemiology  
International Congress on the Applications of Mathematics  
Universidad de Chile  
Santiago, Chile  
March 16, 2006

**Invited Talk: Applications of Mathematics in Public Health: Analyzing the 1918 Influenza Pandemic in Geneva, Switzerland.**

Universidad de Colima  
Colima, Colima, Mexico  
March 10, 2006

**Invited Talk: Transmissibility of the 1918 influenza pandemic and the effect of hypothetical interventions**

Avian Influenza Information Exchange  
MSL Auditorium  
Los Alamos National Laboratory  
Los Alamos, New Mexico  
February 22, 2005.

**Talk: Containing the next influenza pandemic: Lessons and knowledge from past epidemics.**

T-10, Biological Sciences group seminar  
Los Alamos National Laboratory  
Los Alamos, New Mexico  
December 07, 2005.

**Poster: Transmission dynamics of the great influenza pandemic of 1918 in Geneva, Switzerland: Assessing the effects of hypothetical interventions.**

Second European Influenza Conference  
St.-Julians, Malta

September 10-14, 2005

**Discussion leader: Parameter estimation, uncertainty and sensitivity in epidemic modeling**  
Mathematical Epidemiology Workshop (PIMS)  
Banff, Alberta, Canada  
August 25, 2005

**Talk: The 2001 Uruguayan Foot-and-Mouth Disease Epidemic: Modeling and Testing of Data-driven Hypothesis on Spatial Connectivity**  
Modeling the dynamics of human diseases: Emerging paradigms & Challenges  
Snowbird Resort, Snowbird, UT  
July 17, 2005

**Talk: Modeling the 2001 Foot-and-Mouth Epidemic in Uruguay using Geo-referenced data**  
2005 SIAM Annual Meeting,  
New Orleans, LA.  
July 11-15, 2005

**Poster: Spatial Patterns of Infection: Modeling the 2001 Foot-and-Mouth Epidemic in Uruguay using Geo-referenced data**  
1<sup>st</sup> Young Researchers Workshop  
Mathematical Biology Institute (MBI)  
Ohio State University  
Columbus, Ohio  
April 01, 2005

**Invited talk: The Effects of Public Health Measures on the Transmission of SARS**  
From Cholera to Smallpox and Beyond: Mathematical Modeling for 21st Century Public Health Practice Conference  
Riverside County Department of Public Health  
Palm Springs, CA  
March 09, 2005

**Invited Talk: Mathematics Department Seminar**  
Invited talk: Mathematical models for Emergent and Re-Emergent Infectious Diseases: The cases of SARS and Foot-and-Mouth Disease  
Department of Mathematics and Statistics  
University of New Mexico, Albuquerque, NM  
October 12, 2004

**Invited Talk: Mathematical Biology Seminar**  
Transmission Dynamics of SARS and the Effects of Public Health Interventions  
Department of Mathematics, Arizona State University, Arizona.  
March 22, 2004

**Talk: 2003 SACNAS Conference**  
SARS outbreaks in Ontario, Hong Kong, and Singapore: the role of diagnosis and isolation as control mechanisms  
2-4 October, 2003  
Albuquerque, NM

**Poster: Conference on Growing Networks and Graphs  
in Statistical Physics, Finance, Biology and Social Systems**

*(Travel Grant from Graduate School at CU)*

University of Rome La Sapienza

Poster Presentation (with Zoltan Torockzkai): Halting Epidemics in Proximity Networks

September 1-5, 2003

Rome, Italy

**Poster: Networks: Structure, Dynamics and Function**

Center for Nonlinear Studies, Los Alamos National Laboratory

Poster presentation (with Zoltan Torockzkai): Halting Epidemics in Proximity Networks

May 12-16, 2003

Los Alamos, New Mexico.

**Talk: SACNAS (Society for the Advancement of Chicanos and Native Americans in  
Science)**

*(Travel Grant from Graduate School at CU)*

Oral Presentation: Network Analysis Approach to Epidemics.

Anaheim, California.

September 2002

**Talk: SACNAS (Society for the Advancement of Chicanos and Native Americans in  
Science)**

Disease Dynamics on Small-World and other Networks.

Phoenix, Arizona

September 2001

**Poster: International Symposium at the UMET**

Disease Dynamics on Small-World and other Networks,

San Juan, Puerto Rico

October 2001

**Poster: AMS (American Mathematical Society)**

*(Travel Grant from Graduate School at CU)*

Disease Dynamics on Small-World and other Networks

San Diego, California

January 2002

**Poster: SACNAS (Society for the Advancement of Chicanos and Native Americans in  
Science)**

Deterministic and Stochastic Reaction Diffusion models in a Ring

Atlanta, Georgia

October 2000

**Poster: AMS (American Mathematical Society)**

Deterministic and Stochastic Reaction Diffusion models in a Ring

New Orleans, LA

January 2001

## CONFERENCES AND WORKSHOPS CO-ORGANIZED

### **Session: Mathematical and Statistical Applications in Epidemiology and Public Health SIAM Annual Meeting**

Co-organized with: Miriam Nuno, Sara Del Valle and Carlos Castillo-Chavez  
July 07 - July 14, 2006  
Boston, MA

### **Computational and Mathematical Approaches to Homeland Security, Public Health Policy and Control: Challenges Posed by Emerging and Reemerging Diseases**

Co-organized with: Miriam Nuno, Sara Del Valle, Ariel Cintron-Arias, Fabio Sanchez, and  
Carlos Castillo-Chavez  
Los Alamos National Laboratory  
Conference Organizer  
June 30 - July 3, 2003  
Los Alamos, New Mexico

**Reviewer for:** American Journal of Epidemiology, Journal of Theoretical Biology, Mathematical  
Biosciences, Bulletin of Mathematical Biology, Mathematical Biosciences and Engineering,  
Mathematical and Computer Modeling, Statistics in Medicine, IEEE Transactions on Biomedical  
Engineering, Theoretical Biology and Medicine, Dengue Bulletin, PLoS Computational Biology,  
BMC Public Health, BMC Infectious Diseases, BMC Medicine, Proceedings of the Royal  
Society: Biological Sciences, Proceedings of the Royal Society: Interface, Nonlinear Analysis  
Series B: Real World Applications.

## MEMBER OF PROFESSIONAL ORGANIZATIONS

- Society of Mathematical Biology
- American Mathematical Society

### **On the Mexican National Prize for Youth**

The Mexican National Prize for Youth is awarded by the Mexican Institute of Youth or Instituto Mexicano de la Juventud. Established by the Mexican legislature in 1998, the Institute of Youth is a federal agency that promotes participation by young people aged 12 to 29 in improving the social, cultural and living standards for the Mexican nation and its 34 million youth.

The prize is presented by Mexican President at the presidential residence of Los Pinos in Mexico City. The award recognizes cumulative academic activities, including research, publications, invited talks, awards and community service. The award includes a diploma, a gold medal and 110,000 Mexican pesos (more than \$9,800). More information at:

[http://www.sep.gob.mx/wb2/sep/sep\\_Premio\\_Nacional\\_de\\_la\\_Juventud](http://www.sep.gob.mx/wb2/sep/sep_Premio_Nacional_de_la_Juventud)

## REFERENCES

Carlos Castillo-Chavez  
Department of Mathematics & Statistics  
Arizona State University,  
PO BOX # 871804  
Tempe, AZ 85287 - 1804  
Tel 480.965.2115  
Fax 480.727.7343  
Email: [chavez@math.asu.edu](mailto:chavez@math.asu.edu)

James Mac Hyman  
Mathematical Modeling and Analysis, T-7  
Mail Stop B284  
Los Alamos National Laboratory  
Phone: +1.505.667-6294  
Fax: +1.505.665.5757  
Email: [hyman@lanl.gov](mailto:hyman@lanl.gov)

Nicolas Hengartner  
D-1 Statistical Science Group  
Phone: +1 +505 667-7647  
Email: [nickh@lanl.gov](mailto:nickh@lanl.gov)